VOLUME XCV

NUMBER THREE

THE NATIONAL GEOGRAPHIC MAGAZINE

MARCH, 1949

Dixie Spins the Wheel of Industry

With 10 Illustrations
33 Natural Color Photographs

WILLIAM H. NICHOLAS
COGRAPHS

J. BAYLOR ROBERTS

Operation Eclipse: 1948

With 13 Illustrations and Map 35 Natural Color Photographs

WILLIAM A. KINNEY

Exploring the Past in Panama

With 16 Illustrations and Map MATTHEW W. STIRLING
11 Natural Color Photographs RICHARD H. STEWART

Spices, the Essence of Geography

With 19 Illustrations

STUART E. JONES

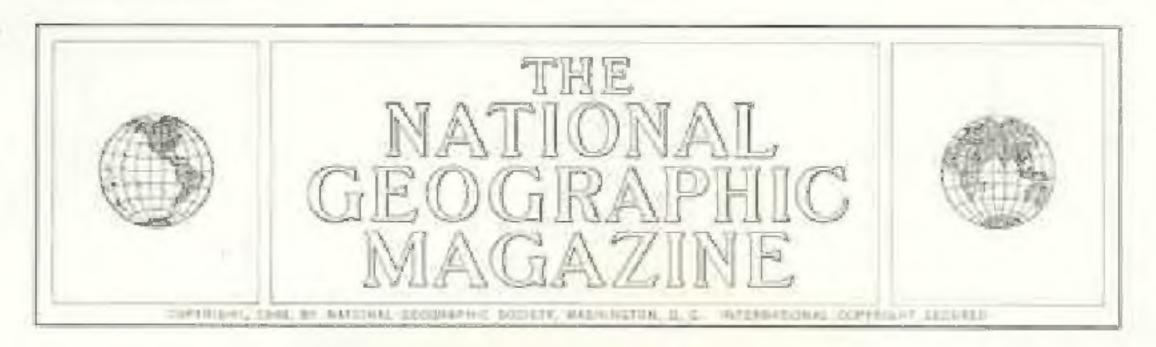
Fifty-six Pages of Illustrations in Color

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY

WASHINGTON, D. C.

500 AYEAR

50c THE COPY



Dixie Spins the Wheel of Industry

By WILLIAM H. NICHOLAS

Illustrations by National Geographic Photographer J. Baylor Roberts

POCK HILL, South Carolina, will never be the same again.
The 1940 census put the population of this tranquil York County town at 15,009. Mainstays in its comfortable economic life were a textile finishing mill, some cotton mills, a rug mill, a hostery mill, and Winthrop College, which is the South Carolina State college for women.

Then one day an engineer for Celanese Corporation of America came to town, met Charles L. Cobb, president of the Peoples National Bank, and revealed that he was looking for a site for a new plant. Things began to happen.

Last summer I saw the towers of a \$40,-000,000 plant of Celanese Corporation rising in the middle of a 1,100-acre tract along the Catawba River, a few minutes' drive from town (page 289). Here the plant can get the water it needs—100,000,000 gallons a day. Late last year it started to produce the synthetic textile yarn, Celanese, in enormous quantities.

Workers Ride 30 Miles to Jobs

Most of the 5,000 workers will live within a radius of 50 miles from the new plant. Hundreds now ride to their jobs in their cars. Others come in special buses. Many more live in new homes in a real-estate development between the plant site and Rock Hill. And the town liself supplies its share of the employees.

Rock Hill floated a 53,000 000 bond issue to widen streets and extend water, sewer, and power lines. Businessmen enlarged and spruced up their stores. Mr. Cobb trans-

formed his old, conservative banking house into a gleaning combination of tile flooring and brass tellers' cages, and installed an airconditioning system.

Rock Hill was definitely on the map of Southern industrial progress.

New Fuctories Bianket Dixie

Establishment of this big plant in a small South Carolina community is not an isolated instance. In a trip through the Carolinas. Georgia, Alabama, Tennessee, Mississippi, and the port of New Orleans. I found on all sides similar examples of the amazing industrial development of the South.

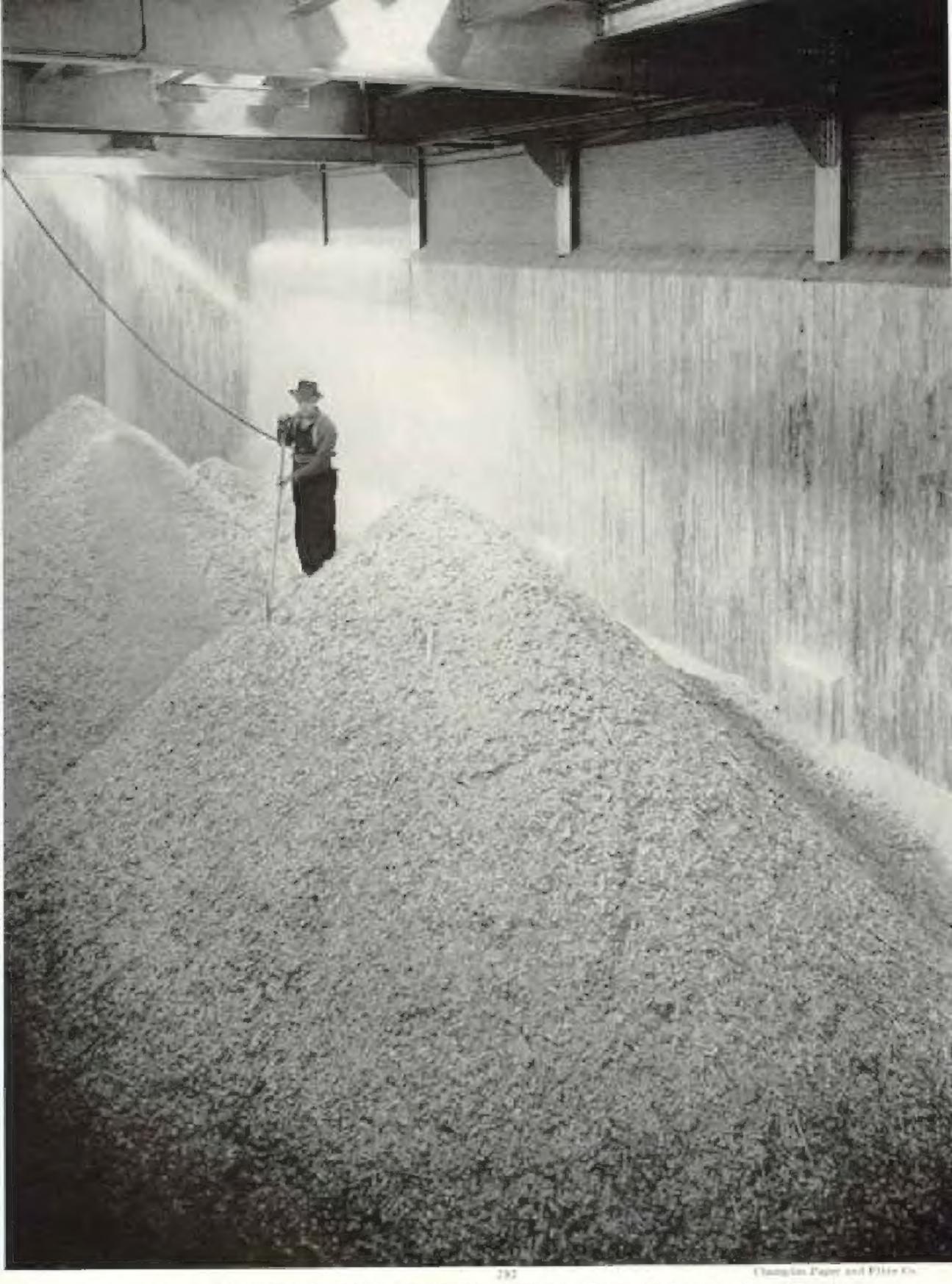
To cover a cross section of Dixie, I followed for the most part the \$,000-mile network of the Southern Rallway System, which serves the South from Mason and Dixon's line to the Gulf and from the Atlantic Ocean to the Mississippi River,†

In the last three years more than 1,000 new factories, 100 large warehouses, and 300 substantial additions to existing plants have spring up alongside its tracks.

Magnolia and moonlight still supply the motive for the Southern symphony, but it is played today to an ever-increasing accompaniment of humming spindles, throbbing paper

*See, in the National Googramme Malarine "Louisiana Trades with the World," by Proderick Simpleh, December, 1947; "Machines Come to Missisppe by J. R. Hildelmand, September, 1937; "Highfights of the Volunteer State," May, 1939, and "Turbeetta on Parade," August 1941, both by Leonard C. Roy, and "Charleston, Where Mellow Past and Present Meet," by Truliose Heyward, March, 1949.

† See National Geographic Society's Map of Southcastern United States, special supplement to the Febmary, 1947, issue of the National Geographic.



When Full, This Bin Holds 263 Cords of Wood, Cut to Chips Small as Dominous

Every day the Champion Paper and Fiber Company mill at Canton, North Carolina, receives some 85 carloads of pine and hardwoods to be turned into paper. The logs are cut up by chippers, a series of Enives set in slots in rotating disks. From the storage bin the chips go to a "digester" to cook in a caustic liquor.



Pajama-elad Businessmen of Royston, Georgia, Hail a Local Industry

The marchers' attire is the product of Textron South, Inc. An enterprising Citizens' Commercial Committee erected a building to house this newest Royston enterprise, one of four Textron textile plants in Disie. The parade was the highlight of a community "Progress Day" celebration.

mills clanging forges, and whining generators. The South's phenomenal industrial growth is the brightest spot on the whole borizon." Ernest E. Norris, president of the Southern Rallway System, told me. Along our lines new plants have averaged one a day for the last three years, and the trend is continuing. It sometimes seems that all the factories have adopted I Wish I Was in Dixie' as their theme song."

Robert Gregg, president of Birmingham's big Tennessee Coul, Iron and Railroad Company, takes exception to saving 'postwar' in connection with the industrial development of the South.

"As a matter of fact," he told use, "World War II actually interrupted it. The South got comparatively few war plants. Its industrial growth started long before World War II and was increasing steadily at the time of Pearl Harbor. Our company launched a big expansion program in the late 1930's. We

were expanding for peace, not for war. The same was true of many other Southern industries. It was fortunate for the war effort that such expansion had taken place, but the war did not cause it."

Textiles South's Top Industry

Giant of Southern manufacturing is the textile industry, which centers in the Carolina Piedmont, extends deep into Georgia and Alabama, and stretches over into Tennessee and Mississippi. Today the South makes about 75 percent of the Nation's textiles. Only bigger operation in Divie is food production.

There were a few cotton mills in the South in the 1790's and early 1800's, but the first of importance was the Graniteville Mill in Horse Creek Valley, South Carolina. It was established in 1845 by William Gregg, "father of Southern cotton manufacture," Today, bigger than over, the Graniteville Company



Position Ballyay victor

"The Little Southerner" Makes Its Debut in Birmingham's "Kiddie Land Park"
"Engineer" Ernest E. Norris, president of the Southern Railway System, and as many of Birmingham's
fittle folk as could climb abourd, made the inaugural trip on June 5, 1948. The muniature System is complete
with modern Diesel locomotive, six passenger cass, a station, tracks, tunnel, and road-ide signals.

turns out in a year 56,000 miles of drills, twills, jeans, poplins, flannel, duck, and similar woven goods.

The Elkin Cotton Mill, which started operations in 1845 on Elkin River, North Carolina, didn't survive, but it laid the foundations for a longe textile plant. After the Civil War its operators turned it into a gristmill.

Its mountaineer customers raised sheep as well as grain, so a carding machine was installed to card fleeces for them. By 1890 a small woolen mill was set up to make cloth, yarn, and blankets—and the town of Elkin grew up near by.

From this modest beginning evolved the Chatham Manufacturing Company, which made more than 10,000,000 blankets for Uncle Sam during World War II and was the first textile plant to gain the Army-Navy "E" award (page 316).

Today Chatham imports fleeces from Scotland, Australia, Argentina, South Africa. New Zealand, and Uruguay. Seventeen million pounds of raw wool were processed to make Chatham blankets in 1947. Thurmond Chatham, third generation of his family in the business, is chairman of the board. His son is a vice president of the company.

Sons Expand Fathers' Mills

Sons are expanding mills their fathers established at the close of the Reconstruction period.

In 1888 a cotton factory began operations at Fort Mill, South Carolina. Trained weavers from Pennsylvania were imported, but they couldn't get along with the "unreconstructed" Fort Mill boys. A strike and a riot were followed by the departure of the Vankees:

Soon the Fort Mill plant became one of the Springs Cotton Mills, built up by Col. Leroy Springs and expanded now to hage proportions by his son, Col. Elliott W. Springs, World War I flying ace. Today seven Springs mills produce six million yards of cotton fabrics a week. The Lancaster, South Carolina, mill is the largest in the world under one roof, with 7,000 loons. Colonel Springs last year added to it a \$15,000,000 bleaching and finishing plant and foundry.

Moses and Caesar Cone, natives of Tennessee, launched their first cotton mill in 1895 on the then small village of Greensboro, North Carolina. They named it Proximity because "there was nothing to begin with but proximity to the cotton fields." Today the Cone family operates 48 mills. They are the largest weavers of denim cloth in the world. I saw 3.000 looms weaving yarn into cloth in a five-acre room in their White Oak Mill, which consumes about 325 bales of cotton a day.

Robert Lee Stowe and Samuel Pinckney Stowe in 1901 gave up management of their small general store at Belmont, North Carolina, then a water stop on the old Atlanta & Charlotte Air Line Railway, to build a cotton mill. Farmers, a rival storekeeper, traveling salesmen, and others subscribed enough stock to enable the brothers to put up a little mill with 5,000 spindles on which to spin yarn. Its pay roll was \$115 a month.

Now Belmont has 15 yearn-spinning mills with 240,000 spindles, also a finishing plant, a dye plant, five hosiery mills, and many small related firms. Employees number 5,000, and the annual pay roll is \$12,000,000. Although a younger generation is connected with the business, the Stowe brothers, who built up nearly all these enterprises with the aid of the late A. C. Lineberger, still have their hands at the beim. Both past 80, they plan with youthful zest for further expansion.

Lindale Made Sailors' Shirts

The old Massachusetts Cotton Mills of Lowell, Massachusetts, built a factory at Lindale, near Rome, Georgia, in 1895. It was taken over by the Pepperell Manufacturing Company, of Boston, in 1926, when Pepperell absorbed the older company. Expansion through the years has been such that in World War II the Lindale mill was able to turn out enough chambray to make nine shirts for every sailor in the United States Navy.

In the 1920's the South emerged as the leading cotton-textile producing section of the Nation. Northern companies began to build mills below Mason and Dixon's line in ever-increasing numbers.

Now synthetic fibers have made a definite place for themselves in the industry. In 1947 the United States produced 950 million pounds of rayon yare and staple—6½ pounds for every person. Three-fourths of this was manufactured by Southern mills.

E. I. du Pont de Nemours & Compuny of Wilmington, Delaware, is ready to build a multimillion-dollar plant at Camden. South Carolina, for the manufacture of a new synthetic fiber known as "Orlon." Thus far Orlon has been made only in a laboratoryscale pilot plant. It originated in the research section of the company's rayon department, The new über strongly resists deterioration by sunlight.

Burlington Mills Corporation, of Greensboro, North Carolina, is still a first-generation company, founded 25 years ago in Burlington, North Carolina, by J. Spencer Love, Mr. Love, who came out of World War I as a major at the age of 22 with a citation from General Pershing, had saved up \$3,000. With this he started a small cotton mill. But a year later, in 1924, he hitched his wagon to the dawning star of rayon.

Burlington Mills' Growth Spectacolar

Burlington Mills has ridden its star from one small factory to 82 plants in 56 communities in North Carolina, Virginia, West Virginia, Tennessee, Alabama, Pennsylvania, and New Jersey: Australia, Canada, Cuba, Mexico, England, and South America. Net sales exceed \$275,000,000 annually.

Now one of the largest weavers of rayon in the world, Burlington also is a big producer of nylon hosiery, and its ribbon division turns out more than 300,000 miles of satin, grosgrain, and moire ribbon every year.

As chairman of the board, Mr. Love keeps in touch with his far-flung empire by air. The firm owns three twin-engine planes.

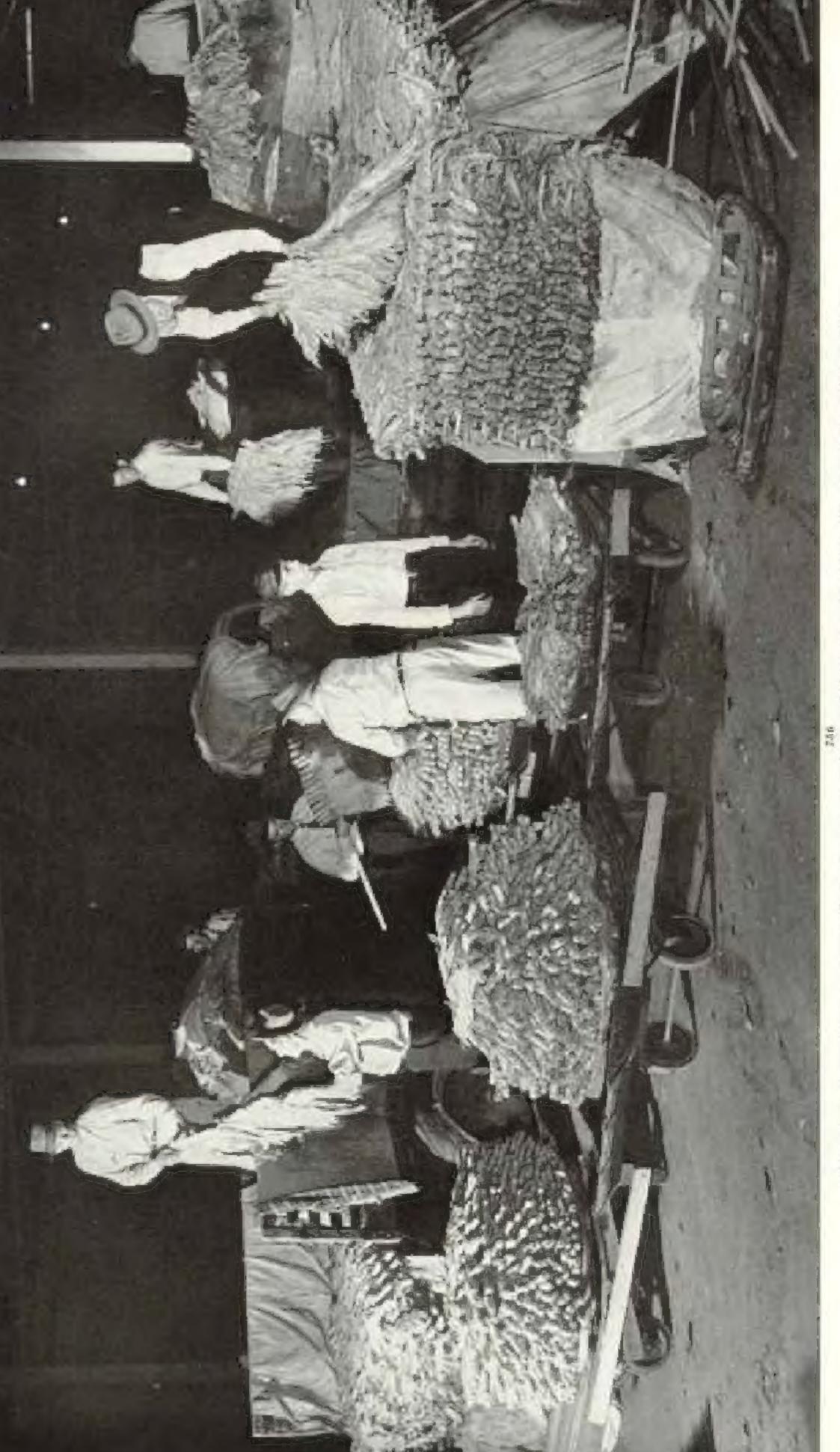
"It's a rather awe-inspiring thing to have your boss talk to you from an airplane while you are sitting in your office," a Burlington executive told me, "Makes you think of the 'man from Mars."

At the Duncan Mill of J. P. Stevens & Co., Inc., in Greenville, South Carolina, I saw 2,000 looms weaving cloth tracks of various types and combinations of synthetic fiber. The company operates cotton, rayon, and woolen mills in the Carolinas and Georgia, and also acts as sales representatives for other mills. Site of its newest mill, which will weave woolens, is at Dublin, Georgia.

In the last two years Deering, Milliken & Company, Inc., has built four new mills at Clemson, McCormick, Johnston, and Pendleton, South Carolina. Old-time mill operators still are talking about them. Each is window-less, scientifically illuminated with theorescent lighting, and equipped with the most modern textile machinery. Since 1940, Deering-Milliken has spent more than \$50,000,000 for new equipment in the South to weave cotton, woolen, and rayon cloth in 20 mills.

To supply vayon weavers with enough fiber to feed their looms keeps Southern raw-material manufacturers running full blast.

The Southern Chemical Cotton Company



Tobacco Auctioneer Will Ring in This Winston-Salem Warehouse With the Dawn the Chant of the

Early thing farmers stack their shallow trays, or haddets, with "hands" of toltacco. The baskets will be weighed and placed in fong rows. Then buyers, moving at a shadding for the auctioneer's singsong recital, will pass down the rows, swiftly making bids. In a five-baur sales day 550,000 pounds of tobacca may be sold spage 5063.

In Chattanooga, for example, buys cotton linters from cottonseed-oil manufacturers by the solid trainload, processes the linters into pure cellulose, and sells that to rayon-yarn makers. Rayon is made from cellulose obtained from cotton linters or wood pulp, or from a combination of both.

The company's cellulose also goes to manufacturers of line paper. Fifty percent of every dollar bill Uncle Sam makes is composed of cotton.

Rayon Yarn from "Soup"

At the rayon plant of the American Enka Corporation, near Asheville, North Carolina, I saw liquefied cellulose, or chemical "soup," forced through tiny spertures in hundreds of nozzles. Each nozzle was immersed in a bath of dilute sulphuric acid and salts.

When the "soup" comes in contact with the acid bath, it congulates at the tip of each nozzle. To start the spinning process, an operator runs his finger across the tip of a nozzle. The congulated "soup" adheres to it in the form of a thread. He draws the steamd up out of the bath, over a series of guides and rollers, and starts it winding on a rapidly revolving spool.

All about him hundreds of these spools are spinning, drawing seemingly never-ending threads up from immersed nozzles.

A large share of Enkn's production goes to automobile tire cord manufacturers (page 317). Nearly every big tire company has one or more weaving plants in the South.

Nylon yarn is made by Du Pont, whose newest plant near Chattanooga, Tennessee, started production last July (page 317).

Nylon-Textiles' Glamour Girl

Glamour girl of the textile industry is nylon full-fashioned hosiery. In the plant of the Meirose Hosiery Mills at High Point, North Carolina, I saw how carefully the stockings were handled to keep them from developing runs, sangs, and other defects during manufacture.

With all precautions, which include daily manicures for feminine workers and aylon-lined baskets or other special carriers to take the finished product to the packing rooms, a manufacturer is happy if 70 percent of his sheer quality output turns out to be first grade.

"I'm glad women like sheer hosiery," one maker told me. "It helps business, because the stockings don't last. Heavier nylons wear much longer."

Sheer nylons in largest demand today are twice as sheer as the finest prewar silk and much more transparent. The P. H. Hanes Knitting Company in Winston-Salem has grown into one of the Nation's leading manufacturers of knit underwear (page 301). Here I was amazed at the efficiency acquired by girl operators. Some of the complicated sewing machines stitch as many as nine threads at one time in making seams for heavy underwear.

Largest manufacturer of work clothes in the world is Blue Bell, Inc., of Greensboro, North Carolina. The original Blue Bell sewing shop was set up in Jellico, Tennessee, in 1906, with a dozen machines. After World War I a series of mergers expanded Blue Bell to 21 plants, mostly in Mississippi, Louisiana, Tennessee, North Carolina, Virginia, Georgia, and Alabama.

The big Avondale Mills, with general offices at Sylacauga, Alabama, which uses 180,000 bales of cotton a year, has been a leader in seeking means to utilize low-grade cotton—always a problem in the industry, since it comprises more than 15 percent of the crop.

One answer has been Avondale's production, as a side line to its quality products, of a nonwoven fabric of low-grade cotton fibers bonded with a synthetic resin. Since the resin is pliable, transparent, and strong the fabric can be dry-cleaned and froned. It is formed in a special carding operation, without spinning or weaving. A team of five men can produce 25,000 yards in a day.

Soiled Napkin? Throw It Away!

Avondale also makes napkins, tablecloths, and draperles out of this fabric. They are so inexpensive they can be thrown away when they become soiled.

Wages of textile-mill workers in the South have increased 165 to 200 percent since 1939. This vastly expanded purchasing power has stimulated a remarkable growth in retailing.

A purely Southern institution, Belk Brothers Company, of Charlotte, North Carolina, affords an example. Back in 1888, W. H. and J. M. Belk opened a small general store at near-by Montoe. From that modest start the Belk Brothers group of department stores has grown to 276, operating in every Southern State. Of these, 100 are in North Carolina. In the last decade Belk Brothers has opened 100 new stores.

Since the war, Sears, Roebuck and Company has built retail stores in Durham, Asheville, Greensboro, Winston-Salem, Fayetteville, and Charlotte. North Carolina: Florence and Greenville, South Carolina: Gadsden, Alabama; Jackson and Greenville, Mississippi; Macon, Georgia; and Knoxville, Tennessee.

The J. C. Penney Company's new single-

floor warehouse sprawls over eight acres just outside Statesville, North Carolina. From a double-track Southern Railway siding 18 boxcars can be unloaded at once. Merchandise of Southern manufacture is redistributed to Penney stores from there.

Forests Spell Wealth in Dixie

Forests represent one of Dixie's basic resources. On more than half the land of this region, trees are the logical crop. Trees blanket two-thirds of Georgia. And most Southern

trees grow faster than northern,

In years past many Southern groves grew wild on thousands of acres of abandoned farm land. But the rapid rise of Dixle's pulp and paper industry, in which a billion dollars now is invested, makes it imperative that an enormous supply of pulpwood be available.

Southern pine trees, among the fastest growing of all pulp timber, attain a diameter of from 8 to 10 inches, suitable for pulpwood. in about twelve years. Thus Southern pine forests, under scientific care, can replenish

themselves indefinitely.

State governments and paper mills have united to fight forest enemies. Fire is enemy number one. Fires alone destroy enough wood to support another Southern paper industry nearly two-thirds as large as the one now in operation.

Systematic protection pays dividends. Within five years, fire watching in South Carolina's Piedmont region reduced the extent

of forest fires by 74 percent.

Tree growers have learned, among other things, to keep pigs out of their young groves. Some years ago a Mississippi forester followed a little wild pig around a forest for seven hours and watched it uproot 407 young pine trees.

Twelve years ago Claude E. Bollard, Hampton County, South Carolina, farmer, set aside some of his submarginal land to provide a

future income for his infant son,

The first season he planted five acres in pine seedlings. By 1945, Mr. Bullard had 37,500 trees growing on 60 acres of land

unsuitable for farming.

Through scientific cutting he already has sold \$2,740.70 in pulpwood, for a net profit of \$1,438.77, which has been credited to his son's education fund. Now Claude, Jr., and the oldest stand of trees are twelve years old. As they increase io stature, so will Claude's annual Income.

For a quarter of a century the Southern Rallway System has operated a 14,000-acre tract known as Lincoln Green Demonstration Forest, at Dorchester, South Carolina, to show how pine trees may be grown for a profit.

More than 22 million board feet have been produced there; yet the volume of merchantable timber is increasing rapidly through the employment of scientific forestry methods.

"Profitable forestry begins with the ax," they tell you at Lincoln Green. "First step in improving a previously mismanaged woodland Is careful thinning. If the stand is predominantly pine, first trees to be felled are those suitable for poles and saw timber. Then undesirables are cut, leaving a forest of select trees, chosen for straight, tall growth."

State-owned nurseries in Georgia last year distributed 18,000,000 seedlings to land owners for reforestation. Alabama distributed six million and set out 18 million more for the

1948-49 season.

Kraft Paper from Southern Pine

In 1884 a German discovered that a heavy. strong, brownish paper could be made cheaply by treating and refining wood chips in a "cooking liquor" in which salt cake had been substituted for the customary, but more expensive, soda ash. He called it "kraft" paper. "Kraft" in both German and Swedish means "strength." Southern pine proved an ideal raw material.

The International Paper Company mill at Georgetown, South Carolina, largest in the kraft industry, can turn out 1,350 tons of

container board a day.

The Union Bag & Paper Corporation of Savannah, Georgia, world's largest integrated kraft container plant, has, as a result of many expansion projects, increased production steadily. The plant produces 1,100 tons of kraft paper and kraft board every day, and its largest converting unit, the bag division, makes bags at the rate of 30 million a day, with an annual output of 735 billion bags! (Page 323.)

At Port Wentworth, Savannah suburb, the new plant of the Southern Paperboard Corporation began last year to make kraft container board at the rate of 450 tons per day. At Macon, Georgia, I saw the new mill of the Macon Kraft Company turning out a freight

carload of container board an bour.

Four-block-long Fourdrinier paper-forming machines, on which the "slurry" of refined pulp and water is transformed into a continuous sheet of paper through the removal of the water, are expensive gadgets. The West Virginia Pulp and Paper Company recently added a new Fourdrinier to the battery at its big Charleston, South Carolina, plant at a cost of \$6,500,000, including installation. These machines, named for their inventors, English brothers, make continuous sheets of paper ranging up to 21 feet in width.



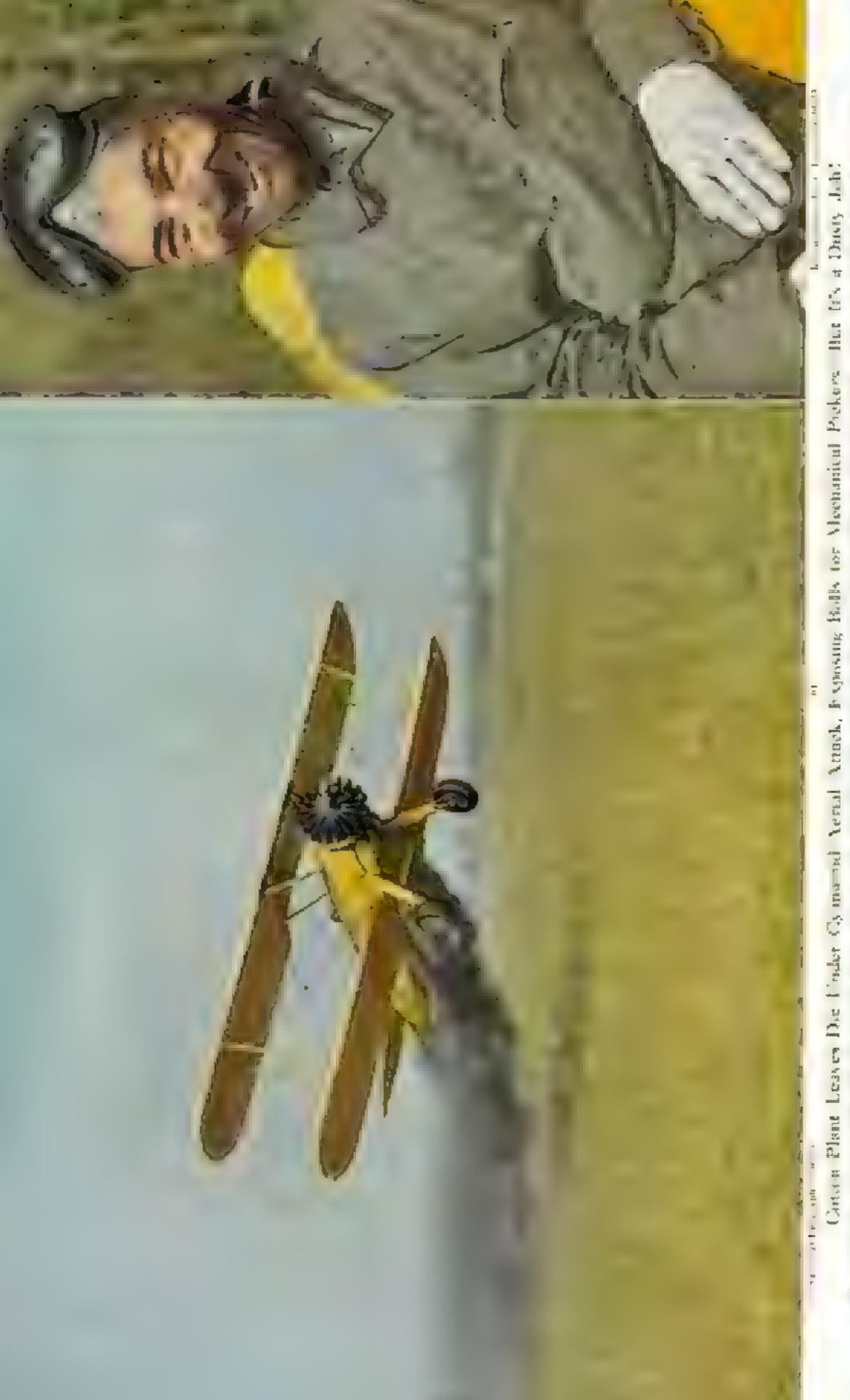
C Nathanal Geographic Statute

239

Sedanterme to J. Barby Botoma

Another New Giant Plant in South Carolina Spurs Dixie's Industrial Growth

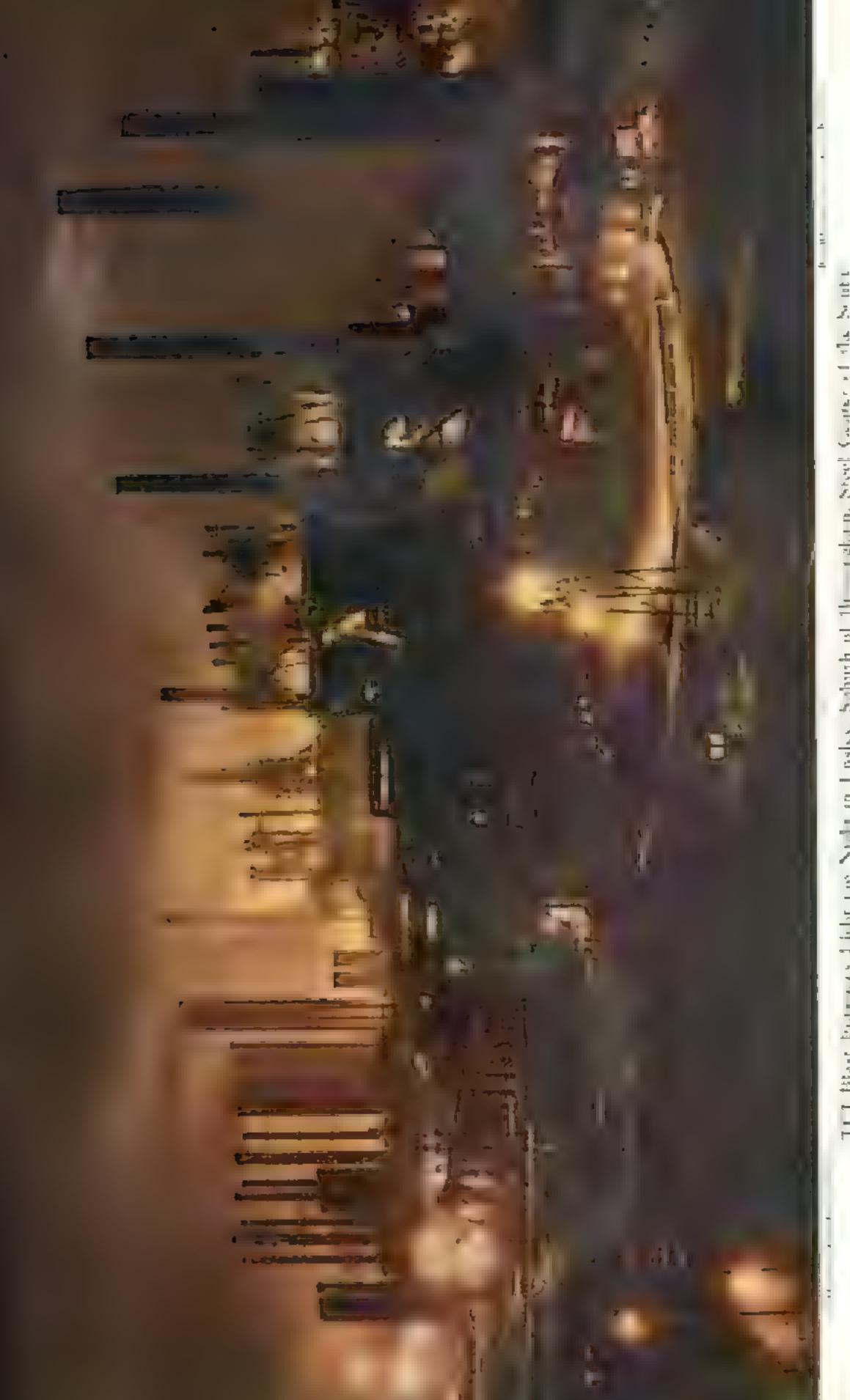
Harmon Howarth, plant manager, shows to Charles Cohli, Rock Hill banker, blueprints for the \$40,000,000 Celanese Corporation of America factory rising along the Catawba River near Rock Hill. Here the synthetic yarn, Colanese, is made. Principal raw materials are cellulose, in the form of wood pulp or cotton linters, and acetic acid. The chemical processes call for use of 100,000,000 gallons of water a day.



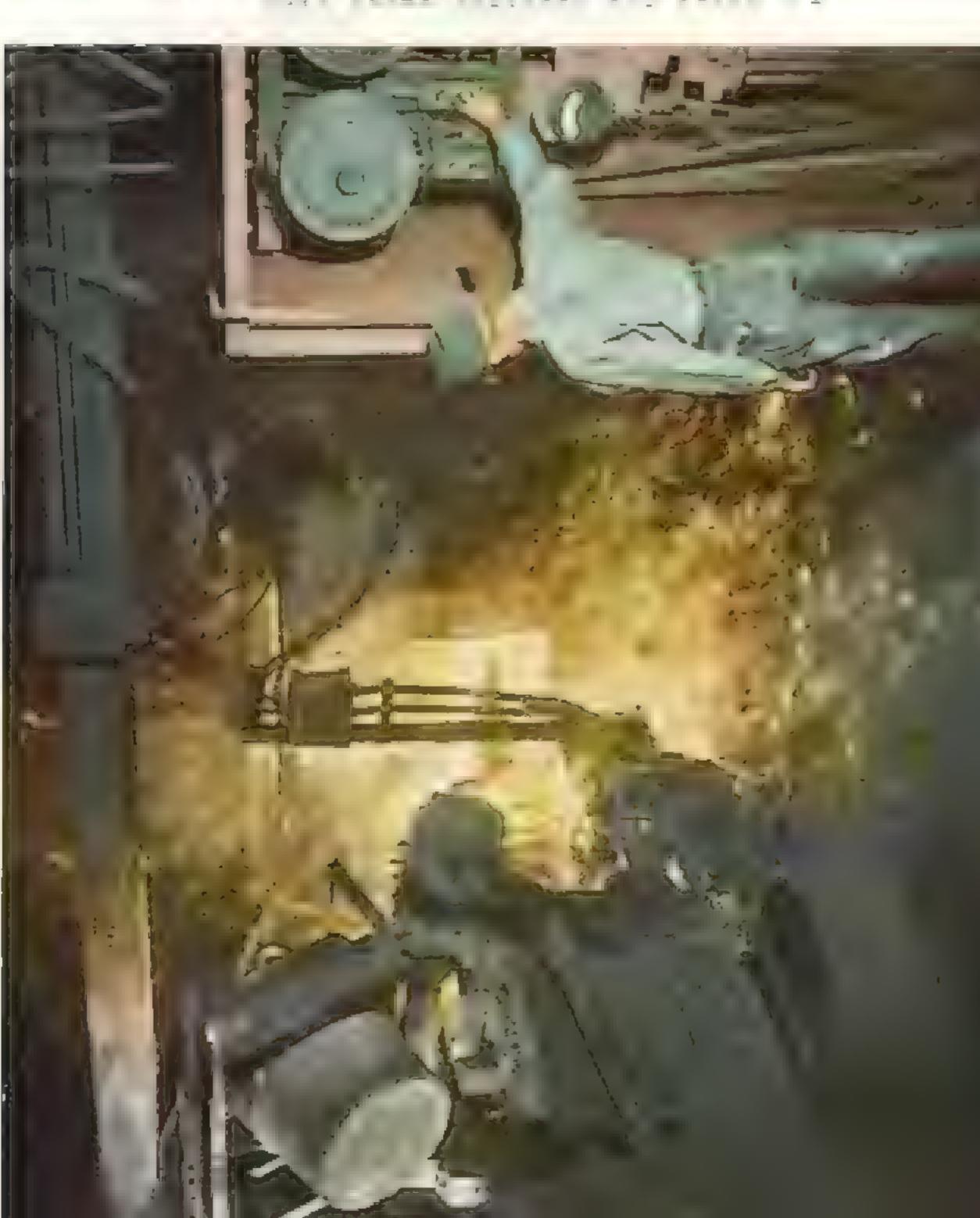
term in pir le lu man The thirty bearing to this draw by a section of the section of the



Acress a Mississippi Delte Caston Field Parades a Medanical Picker Pansing that to Tip In Hopper-had into a Truck



notes, Saburh of the replace, Sevel Courses of the Scott Tel Blan Palmace libria 1 11 11 14 14 11 11 11



lapind Ma al Parred

the r Whi bing Mchi

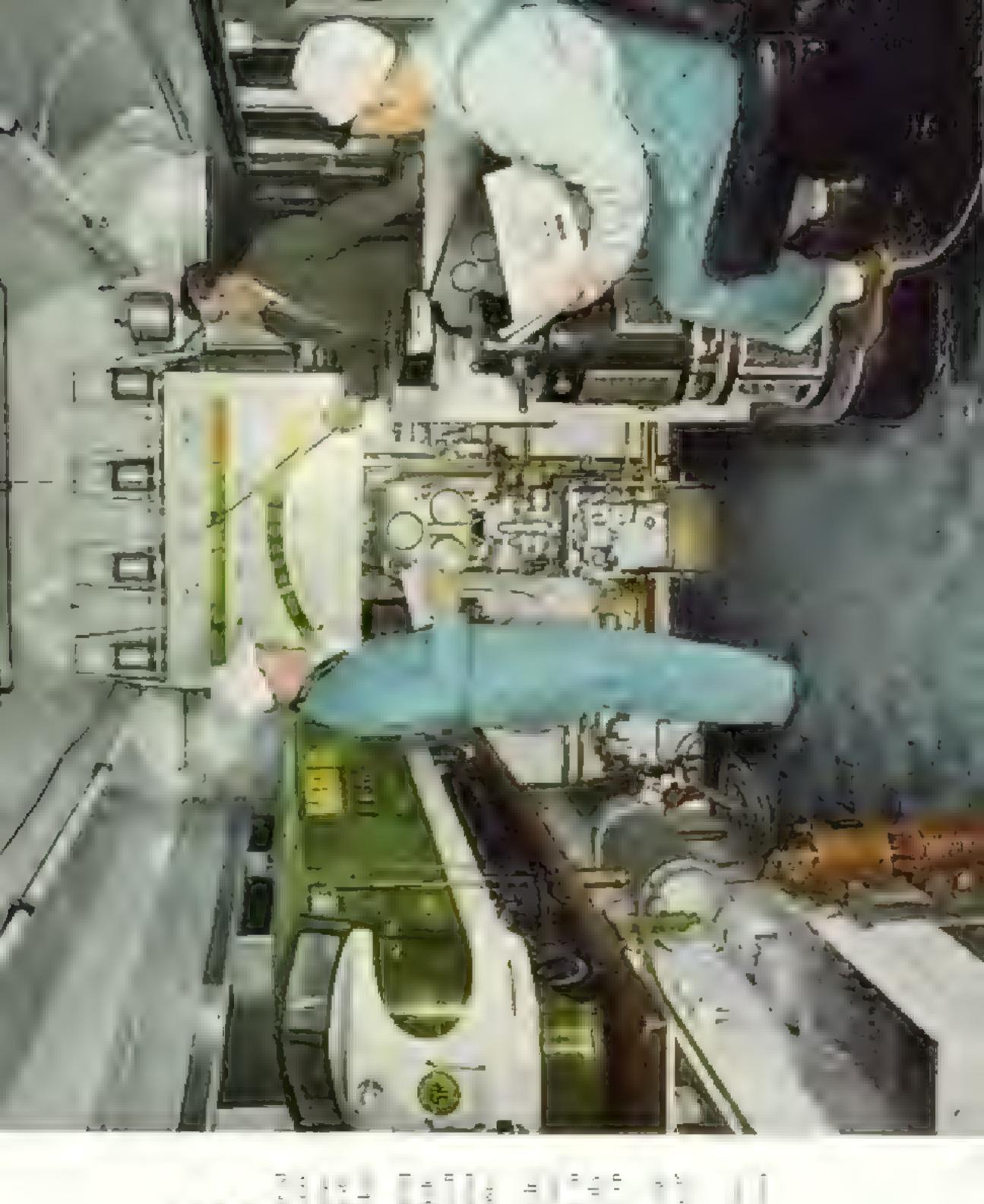
Spiris ada a farred

at the remain Pres

, h.



a state that the letter so the time that the time and the time that the time to the time the time to t Southern Radway Working at Spartanburgy Hayne Suga Turn Old Passencer Core into C'herneden Hee ming-sont Cinches all analysis at the section of the the The property of the self of the person party of the same of ata de radio la seconda



Southern Rubous Laurens Sinfy Diesel Speration ring Trees Clar

S lee l . The Bi . Th

TITE THE BUILDING A

No to the literal



Bellet Greds Teags Between New Organies New Insumational Inch Mississer E. Communication of the above the second of the Communication o



e as la abbla e

Parsage Vist Hold of Onness

The start of the park the country of the park the park the country of the park the park the country of the coun

- Whirling Drums Sugar-cont July Bears and Pelest Them

The composition is a single property of the second contract to the s





Method Coupling train wires. Hermore the Charless wise a Lather Day Persola Gibboes die, Georgia, Center of a \$45,00



Step by the first of the contract of the contr The Homes good read that at last Will Print Office the 4 When Red, on That Chamically Treated I almost that

Decoratety Salart New Librar Designs in a Junifacente, Lac., Statut i e Studio

Lear and a land of the and the second of the



A Millag Machine Vains Rubber Ham Coursing Like Muble State of the graph of the State of the Sta



Striped Spiritswent thath Plans from a fair faithfull Matchine. The first holds in the fair to the fair that had not been as the fair to t





in the Day No very of the Marthews M. H. Greenward, South Carolin While Mathers Wark distillen

17.7 3, Med Proposite of Margarine Shirmer in a Mending the state of the s

1 11 14 1 formally burn the burners of the state Markett for the 21 of





Menutific Shops by I learnings at a ' haydonde' timeary Store the last a trained of the state of the net make the Prince the section of the section of the second of the sec

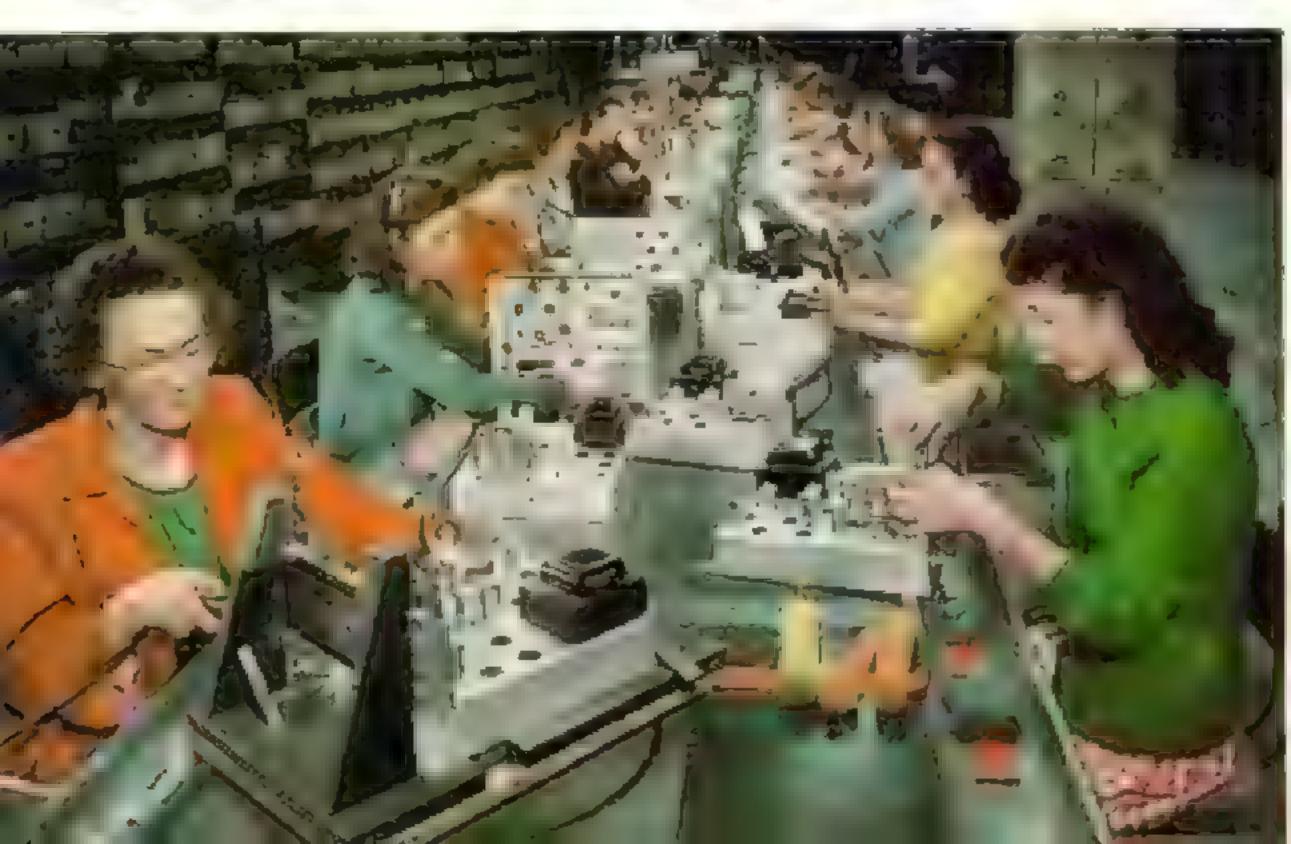


* Maid if Castin' Queers Turn Feed Sacks Into Becoming Process

The art provide some of the second state of th

- Lennesses, Girls Man a Line Asserbbing Radio Surs

The term of the state of the state of a state of the stat



On August 3, 1937, the first press run of a roll of newsprint made in the South from Southern pine took place. In front of me, as these words are written, lies a page of that special edition of the Saraman Epening Press. testimony 12 years later to the excellence of the paper's surface and printing quality.

Months before, the late Dr. Charles Holmes Herty, in his Savannah laboratory, bad keen experimenting with bouthern pere in making

newspelat,

His success is an old story now. Several years ago the Southland Paper Muls. Inc., at Luffele, Texas, began to make newsprint com-

mercially from Southern pine.

Soon Alabama is to have the South's second newsprint cuil., During World War II the Federal Covernment built the huge Alabanin Ordnance Works along the Coosa River in Talladega County. New many of its facilities. have been acquired by the Cossa River Newsprint Company, and a \$30,000,000 mill is being built.

Newspaper publishers, mostly Southern, own \$10,000,000 of the stock and expect to buy 100 000 tons of newsprint each year. Khuberly-Clark Corporation, one of the counary's hirgest fuller and purp and cellulose manufacturers, will operate the mill,

Kimberly-Clark also expects to take thousands of this of sulphate pulp gameally from the plant for use in its first all South manufacturing venture at Memphis. Tennessee.

The company bought the 17-acre Memphis plant in which the Fisher Aircraft Division of General Maters Corporation had built thousands of warpdatees. Strolling through the big factory recently. I had difficulty in believing that it had ever made aircraft

Making kleenes by the Mile

There I saw creped wadding turned out at incrediale speed. Two large machines were producing a mile of Kleener, 13 fort wide. every Lifes monthes

An experiment a quarter century ago by William H. Mason, long an associate of Thomas A. Edison, to produce wood fact by n rehanical, instead of chemical, means accidentally gave birth to a new Southern industry.

Mr. Mason subjected wood chips to highdessure steam until they were thoroughly penetrated by heat and moisture, then suddealy lessened the pressure. The resulting explosion radered the chips to liber.

From the fiber Le mark paper, but it was still and brittle because lignin, the natural Londing agent of wood, had not been expelled. The product did, however, nake good insula-

tion board.

One day in his modest laboratory he placed a piece of half-finished insulation board, or lap, in a strain-heated screw press to force out the water. He applied pressure, turned off the status, and went home to lunch,

In his absence the steam valve sprang a leak and when he returned he found his piece of board smoking. Taking it from the press, he discovered that he held in his hand a piece of hard, dense, perfectly dry fiber hardboard, That was the beginning of the Masonite Corposation, manufacturer of high-density pressed WOOR'S,

Masenite butdlesard new is made in Canada, Italy, Sweden, New South Wales, and the Union of South Africa. But the Jarrest hardboard plant in the world is the parent plant at Laurel, Mississippi Magonite net sales in the fiscal year ending August 31, 1948, totaled \$36,472,950.

Cutarette Paper from Flax

In a l'isgab Forest valley not far from Ashrville, North Carolina, most of the world's eigarette paper is made in the mill of the Ecusta Paper Corporation. Ecusta cigarette paper is mude from fibers of the seed flux plant.

Until World Was II elgarette manufacturers in the United States bought nearly all their paper from European makers, whose resmaterial was old then rags. One of the largest of these was a French concern with which

Harry H. Strates was addicated.

Mr. Straus become worried about the unsettled state of political affairs in Europe. He also looked with distaste up a the fact that cigaratte paper makers were dependent upon the tappickers of central Europe and the Bul-

kans for their paper supply By 1937 Mr. SIMPLY DECKER I I De la C of atlazing the fiber of the seed flax plant. An American banking syndicate, headed by the Washiwia Bank and Trust Company, of which Relect M. Hanes is chairman of the board, and cizarette manufacturers helped him build his modern 82-acre plant. It is located out the Davitson River, where a never failing supply of pure mountain water flows from Pisgab National Forest

On Septe wher 2, 1939, as the Nazis rolled into l'oland to precipitate the war in Purspethe big tool went into operation. That is why amokers in the United States and In the Amercan armies did not have to go without digarettes when Hatler's invasion of western Eurape out off our fateign digarette paper supply.

Ecusta buys its flax principally in California and Minnesota. I saw pearly 40,000 tens —a 12 month supply—stored in its ware-



From This Kaolin Pit Cames Clay to Caut the Pages of the National Geographic

Here is at sea the first the character of the character o

and a In previous years all of the material and blave been horned as waste, for only the local time and black the local time.

The matter upon goes to manufactures in rolls called bobbins, as wide as the regularity of the control breaking and there and there are breaking to long (page 309)

An Industry That Goes Up In Smoke

In 1910, balf a multion names in North Canuse were planted in tobarco. By , the distest price by sweeted a more been S of a
bud prices by sweeted a more by a copy
with 41 million dellar, 1 = 1% of a = 57
budbons. South Cardin to represent ten
new test of their span. [112]

In Bowen's Rig Brick Whitehouse of Lines by Such Carolina, I heard the myst silver of the first of war in a money of the myst state of lines of war in a money of the mass of the first of the mass of

me, his smessine recisil war air dis filishess.

In fourt, behind in the all it was a selfliners to the long tobacco companies and exporting houses shuffled along with him, in a curious, rhythmic lock step, their prospeeded by the tempo of his chant. With a friend I traded the processor.

Why, that's just the way it sounds over the rack," was my none-too-bright comment.

"How did you expect it to sound?" I we companion asked soutly. "And keep your hard in your pockets. If you absent-unindediwiggle a finger in the direction of the auction her, you might discover voulve house? So pounds of tobacco."

Theyers argue their bids by quark signs or by crasp intensitions as in troop to me as the chart itself.

to a supplied stacks an hear was the goal of the warehousement, who had been to be a first of the form of the same to keep we be a god to at the plant for a first of the same day, by the same \$25 and \$250.

thousand pounds of tolarero can be disposed

of Ipage 286)

To find out what happens to tobacco after the farmer sells it, I visited the R. J. Reynolds Tobacca Company at Winston-Salem, North Carolina. Nearly all the big tobacca firms have plants in that State, which makes 60 percent of the Nation's tobacca products.

"I have s noked Camel eighteites for 32 years," I told James A. Gray, chairman of the

company's executive commutee,

"Well," he replied, "I can almost match that. I have been reading the NATIONAL GEOGRAPHIC MAGAZINE for about 25 years."

Back in 1875. Richard Reynolds began to make chewing tobacco in Winston. The original little red factory and its machinery cost less than \$2,500. It made chewing tobacco exclusively.

Now R. J. Reynolds Tobacco Company needs more than 140 large factory units and statege warehouses to age the leaf, prepare the tobacco, and make Camel cigarettes and pipe

and thew mg holacon,

In one building I saw a battery of intricate machines turning out dispectives so fast my eyes had difficulty to lowing the process. A single machine can make more than 1,000 dispectives a minute.

R. J. Reynolds is one of two witelly Southern manufacturing enterprises which. It am number beginnings, have developed intermetion, I distribution on a huge scale for their products.

Coes-Cole, an International Institution

The other is the Cora-Cola Company, of Atlanta, Georgia. The fantastic story of Cora-Cola starts back in the administration of George Cleveland, when John S. Pemberton worked out a formula for a new soft drink in his Atlanta home. For his new beverage a business associate produced a tradequek in flowing script. Con Cola. Today it is one of the best-known trademarks in the world.

To the such fountain of Dr. Joseph Jacobs' Drug Store at Justoric Pive Points in front of Atlanta's old town well. Pemberton carried a just of the syrup one May day in 1880. Soda fountains, rare in those days, operated only in summer mouths. The public response to Countains that first spramer was unimpressive. Pemberton sold only 25 gallons of syrup.

I wo years later, when Mr. Pemberton died, all the property of the intant company could be—and was—carried in a one-horse wagon. But Asa G. Camike, a wholesale druggist, liked Come-C in and had bought a one-third interest in the business before Pemberton's death. A few years later to became the

sole owner of the formula, trademark, and engineers.

Candler began to build up sales. By 1805 the beverage had entered every State in the

Union, and Ladam Territory, too.

While Coca tiols had been sold locally in bottles as for back as 1894 by Joseph A. Basdenbarn at Massburg, Missessippl, it remained primarily a suba-fountain drink until late in 1899, when two Chattanooga lawyers convinced Mr. Candler it should be buttled. There the groundwork was last for the Coca-Cola bottling plants which have spring up as over the United States. Must of them are owned and run by citizens of the communities in which they operate.

Another outgrowth of the lawyers' visit was the Chattaneogra Glass Company, whose pratcipal business is the manufacture of Coca-Colabottles. Its annual capacity is 1,200,000ross, which represents somewhat less than half the bottled Coca-Cola sold last year in

the United States.

In 1919 Mr. Condler retired. Since ther the company has been ewned by thousands of stockholders, who live in all parts of the litted by test. Robert W. Woodraft, a native Georgian, is chairman of the executive committee; Harrison Jones, a Virginian by buttle, is charman of the heart of caretters; and William J. Hobbs, a North Carolinian, is president of the company.

lefore World War H Cora-Cola was sold in some 70 foreign countries. Today more than 5 000 persons, nationals of nearly all countries, are employed in producing and selling Cora-Cola or tride the United States.

the formula for Coca-Cola is one of the work, a top commercial mesteries. In the leng listory of the hashness, andy seven an a have known the secret. Today two of the company's oblest chemists know it. Should both the su literally, the other existing western repy of the formula would have to be taken from a bank you thank consulted refore production of symple could continue.

Southern Furniture Making Centers in High Point

Toward the close of the War Between the States, Capt. W. H. Snow, a Vermont Yankee, trudged along with other Union troops through the forests of North Carolina's Piedmont. The Freate and the fine stands of hardword on all sides made such deep impressions upon him that when the war ended he came lank to High Loint to live.

Captain Snow first made hardwood spokes and handles. Then he sold New England textile manufacturers to roins and shuttle blocks



Strategy than Steel of Burrow by a Gass Fishing Red

the actions in weight of the property of the property Read were Michaell in the property of th

I is North the him was then you do not all the house of the grant contains a section of the first term in the term in the first term in th

Standard Cotte the region of the recommendation of the recommendat

Noted that the property for the second of th

The routh's industrial growth can be a caseon 14 the explanation private projet comparities."

The late James B. Duke built a small hydro-

The plant of the property of t

today the Courage Prower Company to see I mandered form of which have rect manifold to David In the page of page that the courage is the form of the page.

to the Rule of heating a Administration of the Rule of the Artificial and Administration of the Artificial and Artificial and

N Alwand No. of the section No. 2, 5 No



The speed Carriers Slee Paper for "Rell Year Own" Chearette Spinsers

tomers since World War II, bringing its total rural accounts to more than \$1,000.

With Thomas W. Murtin, president of Alabama Power, I motored to Gorgas, site of the company's two Warrior River plants, 35 miles northwest of Birmingham.

Burning Coal Underground

Here I saw preliminary work for a gasification project to be conducted in the area adjoining the company's steam plant. This experiment, conducted by the United States bureau of Mines in cooperation with the ower company, is the first of its kind in the next States to be first of its kind in the to utilize the gases thus produced.

At an outcoppleg of a buriantal scar of coul I saw the , period of a tunnel which has been pushed into a hall, through the scam, for a distance of 1 500 feet. Later, atop the hill, I saw holes, 18 inches in diameter, drilled cown to the tunnel. Some were more than 200 feet deep, The bales were spaced at

ptervis of 300 feet.

A huge air compressor will pamp air into one of these holes, and when the face of the coal has been ignited, the gas will be forced from an adjoining hole. If gas of suitable quantity and quality can be made, it will be atdiasel to operate a gas turbine, which in farm will drive a compressor. Later it is planned, if the flow is constant, to pipe the gas to me of the boilers at the power curpicaby's steam plant

No one knows how great an expanse of coal will burn, what the action of the over-lying strata will be, or how much air pressure will be necessary to keep the coal burning

and produce a satisfactory gas.

Mississippi Power Needs Grow

Not notil 1923, when the Mississippi Power & Light Company was organized, did western Mass, ppr receive dependable electric power. Just a few months ago the company's new \$9,500,000 steam electric generating station was put into operation a few miles north of Jackson. Its huge high-pressure holler, heated by pattern gas, stands eight stories high.

Amazing industrial growth in Jackson. Natchez, and half a dozen other communities along with increased rural electrification, made

such a plant peressary,

The Mississippi Power Company began to serve some 5.500 customers along the Gulf coast and in southeastern Mississippi on January 1, 1925. Some of the small plants it took over had supplied homeowners with electrality only at night. There were no industries to speak of, besidental trace were as high as

25 cents a kilowatt-hour, compared with less than 217 sents today.

thing 31/2 cents today.

New factories in Gulfport, Bilosi, Fascugoula, Hattieslang, Laurel, and Meridian detained more and more electric energy. The company's generating plant near Hattiesburg was scarcely completed in 1945 before work was begun on a second unit to double its out put. Now a third unit is under construction.

Northern Alabama and mortheastern Mississippi are served by the Tentussee Valley

Authority (TVA).*

Valean Guardy Birmingham

Atop Red Mountain, overhooking Birmingham, stands a giant statue of Vulcan, god of the forge, gazing upon a city whose chief source of wealth is from and steel. From deep within Red Mountain comes 90 percent of the iron ore for Birmingham's mills.

Near by, within a radius of eight unles, fictotal and imposition deposits in superlative abundance. Nowhere the in America are the three reposited to the property.

together in commercial quantities.

Largest of Birmingham's many makers and fabricators of Iron and steel is the Transsee

Coal, Iron and Railroad Company,

Refore the War Between the States it began business in Tempesee as a coal-mining company. By 1886 it had expanded into the iron business in Birmingham; by the time it became a part of the United States Ster. Corporation in 1907 most of its operations were in Abstrata. Now all are in Alabama But it has ever dung tempolary to the Tempessee" in its name.

TCl has grown up with the South. Yet with 32,000 men on its pay roll and all its mills lumming, it is hard put to fill its orders, so heavy as Dude's channel for steel (pages

294, 293, 3141

Last July the Republic Steel Corporation's new plant of Godsden, Alabama, began to

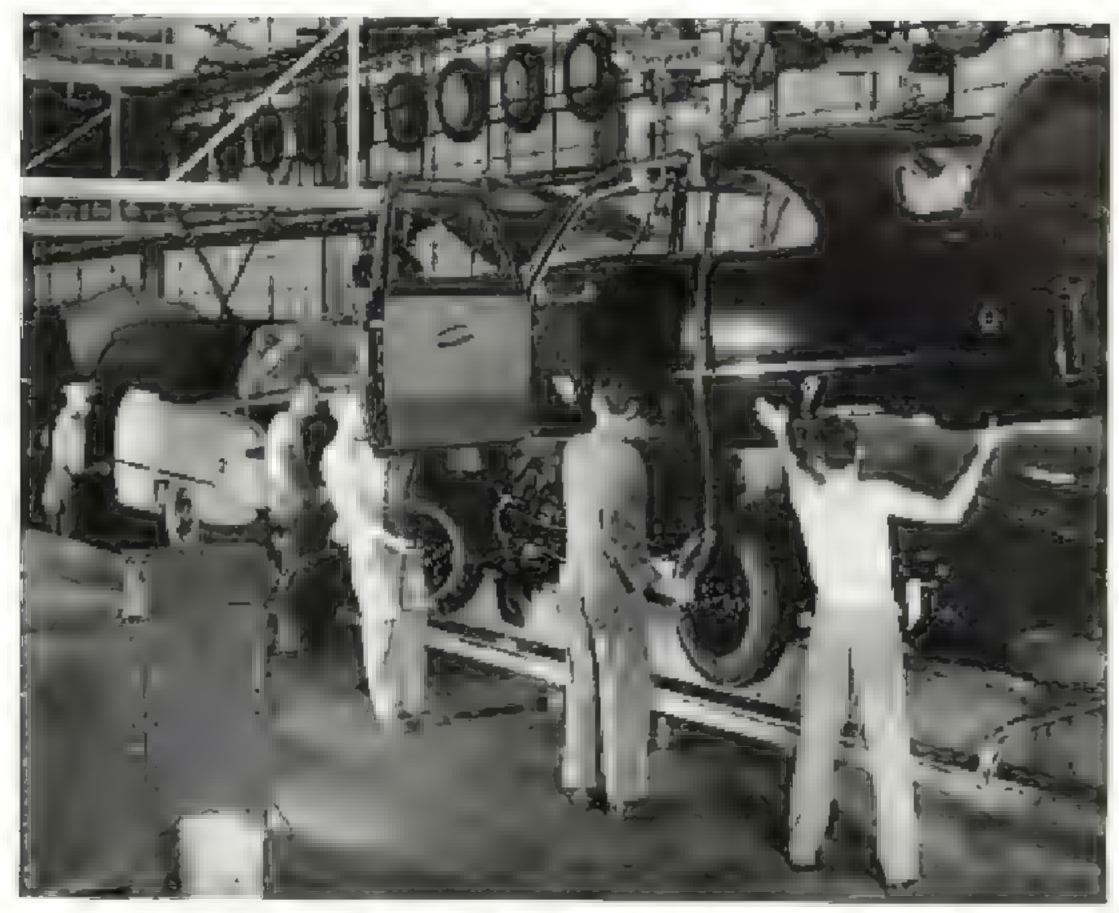
muke steel pipe

The R. D. Cole Manufacturing Company, of Newman, Georgia, founded 95 years ago by R. D. Cole, St., survived a boycott by citizens of the town in its early days. The company was engaged chiefly it, woodworking. One of its products was eighers.

When someone died, the tustom was for a relative to go to the woodworking plant and

order a casket built at once.

If a citizen died on a Saturday night or "See "Ar and the Tirent Lakes of the South," but he had been all the South," but and the South, " but and the South," but and the South, " but and the South," but and the South, " but and the South," but and the South, " but and the South," but and the South, " but and the South," but and the South, " but and the South," but a south of the South, " but and the South," but a south of the South, " but a south of the South," but a south of the South, " but a south of the South," but a south of the South, " but a south of the South," but a south of the South, " but a south of the South," but a south of the South, " but a south of the South of



Budy Moute Classeis in Assembly Love at the New Ford Plant near Against

Here is a second of the second

Sheas. Mr to bid so i is a well-and to do in the proteins the said to the said

Some of the cirian solve on the Mr. Colors we have been been been able to be such process to be given by the contract of a tributal distributed of the contract of the contrac

A property of the property of

every on minutes of each year or de-

The relate Radius of the line of the second of the second of the restaurant from a rich, and the restaurant from a rich, and the restaurant from a rich of the restaurant from the rich of the rich of

Southern Gees "Dress "

letter see election of the part of the part of the part of the section of the part of the section of the sectio

Commercial Help Commercial against Company In Limit a Structure on Sacres, at Decator Mula a an vertical Banks,

verine Tube I livision. Last autumn it shipped not the first scambess, mudercous c apper tub-

log ever made in Dixic.

In the giant North Plant of the Aluminum Company of America at Alcoa, Tennessee, I saw "rivers" of shimmering silver colored metal passing at incredible speed along two-out tables in the world's largest aluminum tolling will. Here thick plates of aluminum alloy pass through a series of five sets of rollers, emerging family in block-long strips about 14 of an lach thick, at such speed that they seem to flow.

Alroa ships bring crushed, washed brusite and Stroken to Monde wasts in province alumina is extracted. This is shipped in hopeper case to the mills. Four pounds of bankite yield two pounds of alumina, which, in turn, yield one pound of aluminan

At I istern L. near Florence, Alabama, the Reynolds Metals Company has been making plorence of the National Land 11.

Atlanta has three of the biggest automobile-assembly plants in the United States. Of lest is Cherroet, now so newhat aversha lowed by two new giant installations. One of these, the General Mators Corporation plant at near by Darred les turns out Buicks, Oldsmobiles, and Pontiacs. Automobile parts, shipped from Michigan arrive by rail and no direct to the assembly lines.

The other plant, of Hapeville, a suburb, was opened by the Ford Motor Company on December 10, 1947. At peak production it can assemble 350 Ford passenger cars and

trucks in me day (page 314).

Georgia Clays Have Many Uses

Arried Mace a and Augusta, Georgia a principal industrial operation is maning of city. Here large coverings of vegetation and earth have been stripped away, revealing thick deposits varied in their conquestion, that it type has a different use.

"God made mun out of clay." a Georgia kar m man t dd me, "and clays have as many

deffering characteristics as man."

Pages of the National Geographic Musical are coated with a white clay coal fired with casein to give them their smooth, glossy hash and enuble them to reproduce with atmost fidelity the fine engravings made from National Geographic Society (duotographic Slightly more than half of this clay is mused and processed by Southern Clays, Inc., at Gordon, Georgia, and by Edgar Bros., at near-by McIntyre. The remainder is Cornwall clay from Great Britain (page 306).

Oak Ridge, Tennessee, has settled down to peace into pursuits. Population of the city

of Oak Ridge has dropped from its 75,000 wartime peak to a stable 55,000. Come are most of the trailers, buts, and temporary barracks

of the heutic war days.

Carbide & Ca.bon Chemicals Corporation operates the three main units for the Atomic Energy Commission—the gaseous diffusion plant for production of U-235; the electromagnetic isotope separation plant; and the Oak Kidge National Laboratory, a nuclear research center (page 320).

I drove over the 60,000-acre area and saw, from the outside, the gaseous diffusion plant and a steam turbo-generating plant which has twice the capacity of Neuris Dam of TVA.

J. A. Jones, head of the construction company which built these two hope installations, started his business career in 1887 in Charlette, North Carolina, as a bricklayer's apprentice at 25 cents a day and board.

At age 24 he started his own contracting business and today he stal is active in the affairs of the J. A. Jones Construction Company, which operates both in the United States

and abread.

Southern Shipping Increases

shapping keeps pace with industrial growth in the Souta. In New Orleans I saw ships from all over the world on my short telearound the clacks.

At the Charmetse piet of Southern Radway hustling stevedores were unbodding 35 000 bags of sugar from a Lykes Bros, ship for the Colonial Sugar Company. Next to it 6,800, tons of Philippine copta were being sucked from the hold of another Lykes saip and blown it to a bage happet from which howears, desined for Procter & Gamble, in Cincinnati, were being loaded

From one and of the port to the other, similar streets of loading and unloading were

being marted

In the beart of the tity I visited International flowe, where mivers from abroad are accorded Southern hospitality, with all the facilities of a club at their convenience. I walked through the new International Trade Mast, where I nited States manufacturers an exporters display samples of their varied lines for these foreign businessment spage 2961.

Lykes Bros. Steamship Co., Inc., of New Orleans, owns a fleet of 50 C-type vessels and objectes scores of others from the United

States Maritimo Commisslui,

It operates on seven established trade routes from United States Goof ports to Great Britain, Ireland, the Mediterranean, and Black Sea areas, the west quest of South America, and the West, Indies and Carli bean area,



Lurine U., Screen, One-bid is Heave as Meral, Holds Her Wants Sight on the Control of the Contro



there haps them is no FULLINGS TO STATE May of Fleeting 1-1° F 49 Tt 191919111

Trible ted a need 1 = ! - Author While it is and the state the second of the and the second of the second o berta a salas tarded to the square to the sq ter to a to the fully of 11111111111 . i and idea alia II ali and the lea .

- I the the man in the second I II why to the II do 11, Per de l' II III E 3. [1] = ÷

1 111 7

I tak kommerced Conding 11 4360



Ealth Western Window Blanceting Pres Up You on Yard, for Instruction

The present add to global production of the present of t



* N. In You Brand Green & Inspection but my In Close to Howers Makery

* Emished day in York, We could be to now. In Ready for Toyoth, Vill Use





I apality of Pulsage I p. 6 fems of Dari on the finish a Chippe I'm lateraters



hey by Cother Fiches by Machine Lits in Revelong Spradby has

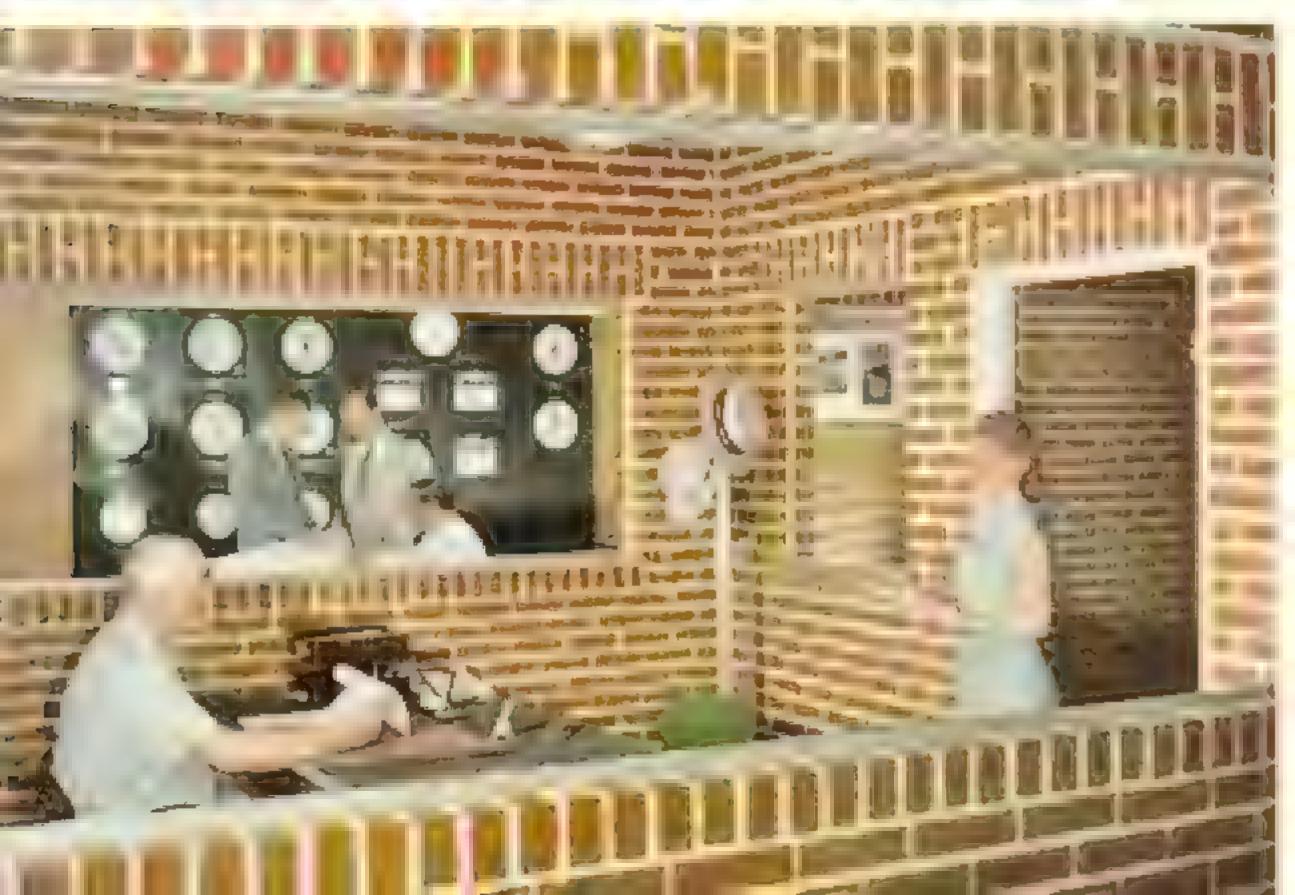
L , I , ...

. .



Acres I was at Oak Ratte Terrosses

r Barra Bak Companie Obace Interiors in Macra Georges, Are Bulle et Brak



The company was fininded by seven Southern brothers

The Delta Line, operated by the Mississippi Shipping Company, Inc., is known as the "coffee theet." Delta ships, in 1947, carried 2.700,590 bags of coffee from Brazil to New Orleans, 94 percent of that port's total.

The 55 ships owned by the Waterman Stramship Corporation, of Mobile, weave a network of world-wide transport service to European ports, to the Far East, to Paerto Rico, and to North Atlantic and west-coast ports of the United States.

At Mohile the Alabam's State Docks provide one of the Nation's most modern scapart terminals. On the east coast, the rival ports of Charleston and Savannah both are expanding tack shipping.

Machinery Streamlines King Cetton

Farm mechanization has radically altered King Cotton and his realm

Cotton acreage owit ded from 42 million to about 21 million in the last 25 years. Some 1,6,10,600 workers, mostly agricultural, movest out of the South between 1930 and 1945. Other thousands are at work in the new factories. Yet 1948 saw the barvesting of a Lamper catton crop.

The heaviest crops in the area I visited now come from the rich Mississippi Dalta, a 50-mile-wide strip which stretches along the east bank of the river from Memphis to Vicksburg and from fertile so I in the Carolinas, Georgia and Alabama.

For generations the Southern planter depended on the cotton hand and his mule to prepare the ground, plant the crop, and cultivate. But between 1940 and 1947, trusters on Southern facus increased 155 percent—from 229,000 to 585,000

Allis - Chalmers Manufacturing Company senses this also demand when it occupied a large former war plant at Gadsden, Alabama and began to build thousands of tractors,

Ten Minutes to Plant an Acre of Cotton

The old labations process of "chopping," weeding and there is young into which a auc, is being supplanted by the flame cultivator, adapted from the military flame thrower by Col. Price McLemore, action grower of Wangh, Malama. Flame may be sably used on a tition plants which are seven tuches high. The cult vater throws a blost of flame at the base of the plants, killing weed and grass growth.

Colonel Melawore found that he could plant at acre of cotton in 10 minutes with mechan and rut ipment, as against 715 hours with man-mule labor. A flame cultivator in 15 mat utes duplicated a hand-hoeing job of 13 hours 20 minutes. At a time when per cost arre of hand weeding was \$5 a day in the Mississippi Delta, flame cultivation cost 50 cents an acre.

Colonel McLemore found that to pick a bale of cotton by hand required at least 75 man-hours. With the mechanical cotton picker he accomplished this tedious task in 1/2 hours (page 291).

I walked through the \$30,000,000 plant of the International Harvester Company at Memphis, built to manufacture mechanical pickers (page 319).

Opened early in 1948, its first year's outtest was the day in the Mississippi Delta, in Texas, and in California.

For every 100 pounds of cotton fiber, the cutton plant yields about 180 pounds of rottonseed. Not more than one-tenth of this is needed to plant the next year's crop. Research has found many uses for the lest over 162 pounds.

Out of each 2,0.10 pounds of cottonseed ought by the Southern Cutton Oi. Company, of New Orleans, 313 pounds on into cottonseed oil: 822 pounds into most for animal feed; 550 pounds, in balls, are sold to feed dealers and danymen; 170 pounds of linters on to mattress makers for stuffing or to ray of prichases for cellabose; and only the remarking 145 pounds, mostly sand and trash, is waste.

The cottonseed oil goes into markatine and shortenings of is sold to bakers, hotels, restaurants, potato chi ppers, and growny stores. To housewives, best-known Southern Cotton Oil Company brand mauses are Wesser Oil and Snowdrift

the Buckeye Cotton till Company, a samsidiary of Proster & Gamble, scap manufacturers, similarly processes cuttonseed on a big scale

suckeye's most Limitar cottonseed off product is Crisco. In refining the oil, soop stocks are recovered as a by-product.

Field Pess Restore Poor Sail

I went to blue Springs Farms, 75 miles south of Arberta and 15 miles from Warmsprings, Georgia, to see an outstanding effort to testure some of the South's worn-out soil.

there, in 1932, Cason J. Calaway, textile operator, began to buy up small farms. He eventually acquire, 30,000 acres, including some monotoinous turberland, and turned his entire attention to farming.

First he cleared pine trees and other growth

from a field, then leveled off the land, and in the spring planted a cover cosp of field peas. In the fall he plowed them under, to give humas to the sell, and planted a winter cover or p of vetch. The second year he repeated the process. By the third spring the soil had improved notably. Today he has 3,000 acres quiter out tivation.

One-third of the cleared land is in kurku, the Asiatic weed popular with Southern road builders, who plant it along embankments where its roots penetrate deeply and prevent

erosien.

Mr. Calaway harvests his stubborn crop with heavy equipment and denydrates it in his own plant. Then he seek it as meal for three cents a pound to poultry feed manufacturers, who value it for its high protein content.

Blue Springs boasts the largest commercial multard duckling slock in the country. There I saw about 0,000 ducklings, all that remained from a stock of 20,000. The others had been killed, table-dressed, and quick-frozen for sale at "I hank-giving and Christmas.

10,000 Cows for North Carolina

George S. Coble, former farm boy, he cooperation with North Carolina State, is engaged in a program to bring 10,020 Halstein, Guernsey, and Jersey cows into his native State from Minnesota to help most math prodiction. He selfs the cows to farmers at cost and centracts for the puls.

Colde bought a banktupt daity in Lexington, North Carolina, in 1934 with a down payment of \$75. On the first day he stocked up with 11 ga long of unlk, and his retail

sides totaled \$2.78

Now he is president of Cohle Dairy Products, Inc., which has five processing plants, 20 receiving stations. 900 employees, and handles up to one radiion pounds of male a day.

For the last three years South Carolina has produced more peaches than Georgia. More than bull its crop comes from Spartan-

horg County.

The last weevil's ravages in the cutter fichts a quarter century ago drave Spartanburg to peaches. Four Spartanburg farmers went to Georgia in 1923 to look into peach growing. When they returned, each plantes five acres, that year Georgia shipped 8,701 carloads of peaches: all of South Carolina, 16

New over Sportablity Cutility's 832 square miles extend peach orchards with more than 3,250,000 trees. In 1947 rail shipments of Spartanting peaches totaled 7,265 cars, at 400 bushels to the car. The 1948 crop, hit by

frost, was somewhat smaller.

The major share of Sportanburg peaches—some 5 GOO carloads—is moved by the South era Radway in a bestic three-week operation in July. Some 600 employees from other parts of the System come to Spartanburg to help bresh peaches must be shipped quickly so they will not spoil.

A preparatory step is to hauf in 500 cntloads of baskets, crates, pads, and lids for packing. As shipping deadline nears, 600 carloads of ice must be moved in to supplement the 17,500 tops of ice it, storage in and

arm of Spartage dang.

Shippers bool their praches at six main yards, capable of bondling 857 cars at one time. The main loing station at Havne Yard, on the outskirts of Spartanburg, can be 40 refrigerator cars at a time. A car, requiring 414 tons of ice and salt, can be freed in two minutes.

The peach lader cars, in solid trains, then move northward, consigned to Potomac Yards A cumultia, Virginia, or westward, consigned to Circinnati or Lamisvide yards. Shippers do not know their ultimate destinations. Their contents are sold while the cars are on route, and ultimate point of delivery depends on where the shipper has found the pest market for his peaches. By telegraph, the yards are advised of the changed destination.

'My the time the last car has moved," a Southern Radwry man told me, "both our clothes and our brains are peach-fuzzy,"

Gamesville Thrives on Chickens

Spartanhung turned to peaches; Grinesville later rutned to chickens. That Georgia town was in the delibriums in 1935. In nine Georgia contries centering on Gamesville, soil was farmed out. Chicken population was less than half a million

A few men became interested in poultry almost in a spirit of desperation. They prespected. By 1945 the clicken population with a radius of all rules had gone up to about 11 million. The Army placed hig orders. By the time the war ended, Gamesville was marketing 35 million chickens a year

Peacetime demand is even higger. Today between 40 and 45 million charlens are being raised, and the poultry, poultry-feed, and poultry-dressing businesses in Gainewille and is bitterland have grown into a \$45,000 000-

a-year a dustry (page 293).

In the large dressing plant of Jesse Jewell one of Gamesville's ploneer chi, ken men, I saw live chickens come into the plant at one end and go out at the other, dressed, quick-frozen, and packaged, at the rate of 1,800 and bour.



Gram Machines W. J. Tuen The Kr. ft Paper, Rell by Roll, her Starts Bags



Condend Clevels Without Leaving Your Class York Class Die Respect to the American physical physical and the first transfer of the fi

The state of the parties of the state of the

The vicin of legions de last production with the second state of t

has dignizing locations [[horio] M[select, don't has given \$1]. In the process \$1] and the given \$1. In the process of the pro

After the party letale a encertificate we as made the matter that the form of the matter than a surprise the matter than the form of the f

Operation Eclipse: 1948

By WILLIAM A. KINNEY

HIE National Geographic Society, long a paint of the function on an imprecedented scale in 1948, tracking the always spectacular blackout of the sun across one-fifth of the earth.

This "Operation Folipse" set a new high in coordinated scientific endeavor. Never before had a single organization undertaken such an ambitious and complicated venture

to Site y solar phenomena,

The project called for multiple especiations posted along a far-thing are stretching north-castward from litting to the Aleutians. The latest scientific equipment, modern aircraft, and the old reliable antive bearers all have a place in the story.

In its essence, the eclipse operation of May 8 and 9 was a calculated scientific gamble on 149 seconds span out a ong a 5,320-mile path from monsoon deepched jungles to the snow

and log of the sub-Arctic

The eclipse would take five hours to traverse that path. But the seconds that counted most were 35 seconds in Burma, 32 in Siam, six in Chlust, a single second in Korea, two in Japan, 22 and 27 for the most likely pair of outposts in the western Alcutions, and t nully 24 seconds for the aircraft operating aloft in Alcution shies.

A "Calculated Risk"

This calculated risk was decided upon 11 upon the before the 140 seconds came due, and many more months may chapse before the blimate results of the expeditions are known.

The entire operation demanded imagination, meticul as planning, and long weeks of study and preparation. But even planning can have its hold moments, and a historic one came with the decision to utilize the eclipse for testing a traff-blazing aerial technique for astronomical research.

the first income to the property of the first of the service of th

Of that the actionic work of the espedition to Japan would call internstional attention to the discovery that Tukyo was out of place on all existing pages

Many other transked-for footnotes were to

accumulate in the eclipse log

The imeption of Operation Eclipse actually dates back to June, 1947. The previous

month an expedition under the National Geographic Society's numbers had studied the solar eclipse in Hazal, with notable results, casting new light on Einstein's theory of relativity."

An Eclipse Made to Order

The question logically grose, What about 1948's eclipses? One would begin deep in the Indian Ocean, move in a sweeping global curve across southern Burma. Sam, China, Korea, northern Japan, and then over the top of the Pacific into the Meutians (mop, pages 328.9).

Another cel pse would not track that idea

that path for 972 years.

ber astronomers, this eclipse of May 8 and 9, 1948, had made-to-order features. First, it would afterd an of parturity to advance mankind's knowledge of the size and shape of the earth

Many believe that scientists long have have have everything about this subject. Not so they have been gathering data on it since the 6th tentury n. c. and the days of the lireck philosopher. Pythagoras. Yet, after many centuries of observation and research, the best information existing still might lead to crars of a mile of more in plotting the relative locations of many points on the globe

the prime target of a 1948 eclipse project was to procure data that eventually would enable relative locations on the earth's surface.

to be determined more accurately.

A second, though incidental, opportunity also was apparent. Observations might enable us to link some of the existing geodetic surveys on two great land masses, for the sweep of the eclipse would traverse parts of Asia and North America

while to astronomers and mathematicities in their uncersing efforts to come closer to perfection in computations dealing with the curving surfaces of the earth and their relation to the nearer celestial bodies.

Ultimately the gain might well be reflected in everyday life, giving man a basis for more accurate interpretation of maps, and advancing modern mayign ional rechniques for peaceful commerce between nations.

The possibil ties of the May college known, there remained the big question mark of the weather prospects for that time of year.

Meteorological records indicated less than

* See "Eglipso Hunt of in Binens's Renelland," by F. Barrows Cultur, National Grandsuic Macazore, September, 1997.



Distinguished Visitors Drop In on the Camp of the Stancse Expedition

From Francis and Francis Company of the Market Property of the Company of the Com

a state of the term of a sollow. The model has been and the control of the sollow tree that the sollow tree that the sollow tree the control of the control

A Moster Plan Evolves

Two fair new cultonied Dr. Calbert Construct Park and of a National Genegraphs bearing at the Lyman J. Briggs, their most has been parameters Recount. Should be a suggest by calls
weather be corrected a precount togues with last for a powerful case
edges with a resident beautiful to the preparameters of the problem of the preparameters of the pre
parameters of the pre

this is a section stall and its souther stall and its world in the soull's George and a first two distributions of the soull's George and the first transfer are its least of the world of the soull's transfer and the soull's section of the section

las para mas ens.

Observation teams were to be sent to lower Barma, Siam, China, southern Lorea, northery Japan, and the western Abutjans. Teams at the Alautians, where weather would be the most tremberous, were to be backed up by witchell using a yet unproved aerial technique.

Cooperation of Government agencies was enlisted while Departments of State and Commerce and the National Military Establish-

Specific acknowledgment is due for the generous assistance provided by the following agencies of the Departments of National Deatilist and Collimetre:

The Military Air Transport Service, which supplied all transportation for the ground

Irans to their destinations.

The Strategic Air Command of the U.S. Air Force, which furnished the two B-22's for the pionecrists operation on top of the stormy weather "r sof" of the Alemia s.

the bac hast Command and the Alaskan Commutad, which handled ground transportafrom, supplies, and assistance for the expedition stations,

The Signal Corps, which for tributed special camer is and radio technicions,

The Naval Photographic Center, which also made valuable photographic equipment available and later processed the eclipse films.

The Naval Observatory, which tailed the thronometers so essential to the project, and

loaned equipment.

The Army Map Service, which provided maps, technical assistance and personnel, and coord nuced other military support.

The U. S. Coast and Greelet's Survey, long concerned with chart and map making

And the National Sureon of Standards. Carpetation was ottokly forthcoming from scientific institutions la Eurma, Sinni, Japan, Chiga, and other countries. A conquestions contribution came from Finland's Geodetic Institute which loaned two extremely rare Bonsib rff sollo-dimeras for observation use.

Japanese participation was particularly noteworthy for it beraided the rebirth of sepretific collaboration with America after the word of World War II

Why 149 Seconds Counted

The religies on which all efforts now were convenitated was of the annular variety. The name comes from the Latin word, anadus. which means "ring," In an orlipse of this kind, when moon and sun are tree extd, a thin circlet of golden light is visible around the dark coses of the moon. This distinguishes it from the total eclipse which sees the muon completely blacking out the sun,

Careful computations established that only 149 seconds would matter but matter vitally. n the five-hour, 5,000-mile progress of the

etlipse from Burna to the Aleutians.

If enough of these important seconds of

the edipse could be trapped on fdm, there might well be rejoicing

To put it unother way, an armiar eclipse has, in astronomers' eyes, four critical con-

14035

The first is the slaver of a second when the moon parkes contact with the ran of the sun-

The second is the moment when the moon has come competery within the suns disk and the edges of the two appear to be touching. This is foreranner of the central, or annular, phase in which the moon and sun make concepted timbes.

Lae third contact is the reverse of the Secretal movement and Sun edges merging inside he sun disk, just as the apoon's shadow is about to start moving off the sun's face

And the fragith, or hold, contact occurs when That movieg-off process is almost complete, and the rims of the beavenly bodies are

about to part, ending the edgese.

The job was to "measure" these four contacts. Measure them both in terms of the precise split-second times and of the give graphical locations at which they occurred in effect, the aim was to employ the ecupse as an easterness measuring instrument to produce more nearly accurate information on the size and shape of the earth.

A Job for the Sound Camera

For the layman, the method to be employed may sound deceptively simple. It was to I hatograph the eclipse on 35-mm, motion pic ture film, with the film's sound track recording the one-per-second tiess of chron meters. checked for accuracy by radio time signals.

Actually, the procedure was much more complicated. For the ground parties, photographic therevation sites had to be spetted on w near the sclipse path, with meticulous precision as to latitude and longitude.

Instruments had to have a stable platform and be guarded against vibration, or their recards would be valueless. Radio time signals were unother consideration. And last the projected use of the B-29's rused its awn lost of troublesome problems.

On the human side, expectation requirements were no less exacting than on the mechanical sire, and the Nathoral Geographic Society selected its men with characteristic care.

To E. A. Hallerch, past President and Dicector of the Milwankee, Wisconsin, Astronomical Society, was entrusted the lead-off



of every control of the selfis the late program of Margareth the second of the Bilands.

Le se de los este production de la serie de la Remark, se la complete de la serie de la complete de la complete

Heading the third was the Received from its J. Beyden, a. J., Director of Georgetown leve Astronomical Observatory, Washington, D. C., who was assigned to operate in China in the Wukang-Hangchow area.

A Gentire to Reviving Japan

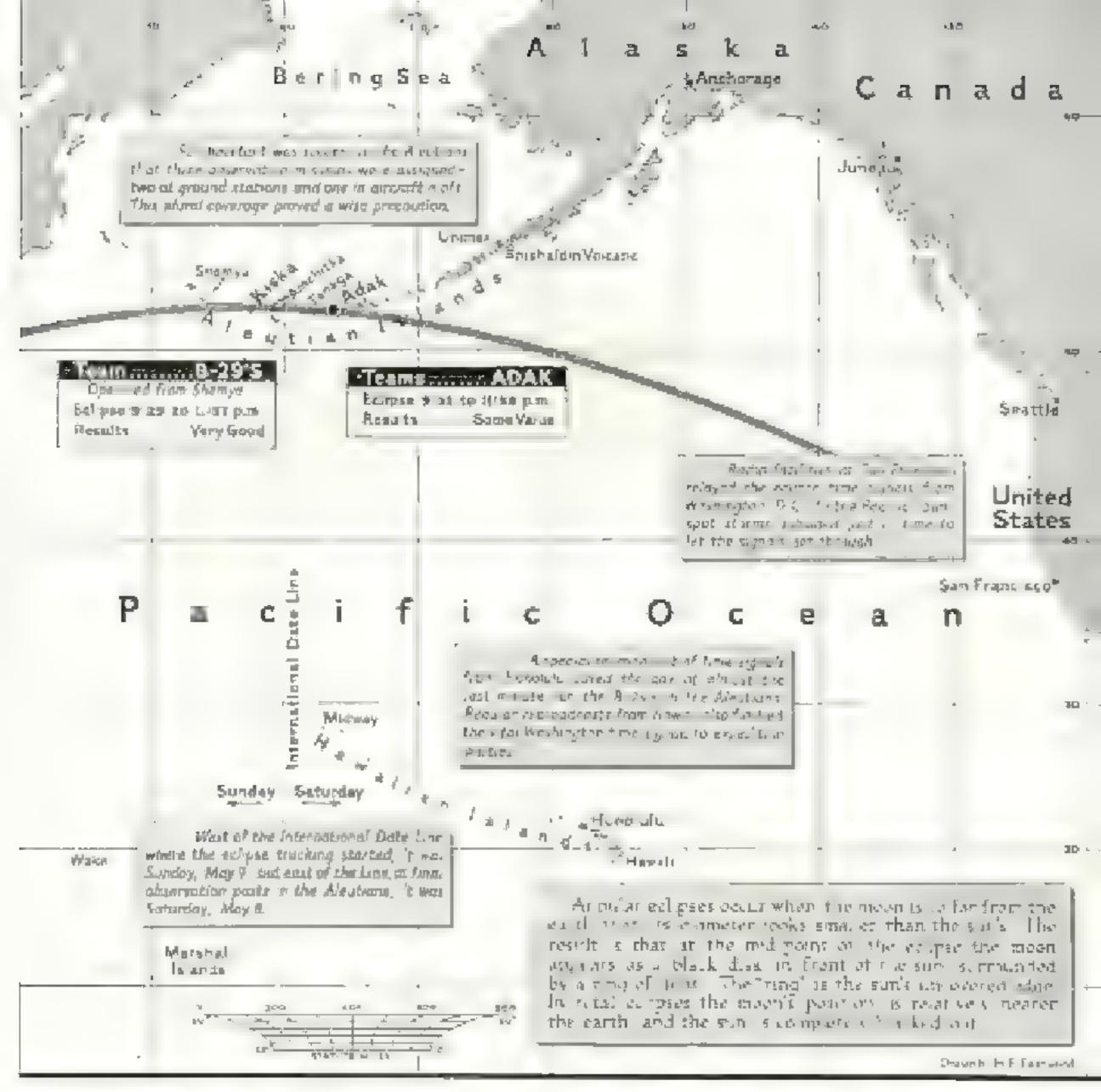
For the fourth Dr. Briggs picked a grand II to produce the constant of the constant of the constant state of Yerkes Observatory, Williams Bay, Wisconsin, and gave him the observatory and constant is the constant of the con

The other is to the first value of a man is a state Relation of posture of posture of posture scleratific analy. Dr. Bangs named Dr. Yasus Hag hara, Three out of the Tokyo Astronomical Observatory, and Dr. J. A. O Keefe, of the U.S. Army Map Service, as especition costenders.

To exact the work and preparations of all the teams in Asia, J. M. M. Johnston of the National Geographic Society of the signed to Tokyo as a constant.

Across the Pacifi in the Martin Ingr. and observation responsibilities with two expects horsewed from the U.S. In I and Geoletic Survey—Lt. (onder, George R. Stationalder Shelton was give K. Commander Shelton was give K. I.

in the end of the first or obdite



to produce more than its share of suspense and fristration before E-Hay.

But the Kiska story takes telling elsewhere. To complete the clockwise raster of expedition learners, there was Maj. George H. Wysman Project Officer in charge of the bus specially equipped B-20's from the Strawn Air Command of the U.S. Air Force.

A regard cation of the fear is went forward the jundramatic busaness of planning and or along newed an apace. My find details upply, transport, and equipment den anded to be a

In all the essential preliminary were the Briggs had the able and eather as a sissure of the Okease, of Army Map Servace A scientist of marked talent and background, by the keese brought to the task a thorough understanding of the numerous astronomical problems lovalved.

From the date the coming expedit a confinially automated, the project aroused withspread papular interest. One aspect, in particular, seemed to pique attention. This was that the eclipse actually woals, "end" the day before it "started."

The apparent contracticion prose from the fact the eclipse would cross the International Date Line in the northern Pacific toward the close of its journey, thereby "losing" a day.

Thus, for the official record, expedition observations would begin early Surday morning May 9, in Burma san, thus use in the Alcutians on the afternoon of the pravious day, May 8

Of to the Orient

live late fautary the tempor of preparations quickened. One team after another reported to Washington for technical discussions, then



No Place for Fultering Leas Was Clina's "Camp One Long Clinds," a Hillimp Cose sum ry

Facher Francis 1 Feyder Cett File expedition's for it will be to the wife for the site of the lift of the best term of the last term of the second of the secon 1 - 1 T. V. I. I is in the talk of the same for the same of the sa a rate or the product full has been determined

1 16 5 if with equipment smid wintry stream lites at the National Bureau of 5 1 H / 11 S

North the line terms were a like was from my root low sign to the monthern and southern reaches of Asia. The lourners were uneventful. Dr. Van Buesbroeck noted the only the a feature of his party s trip was an responsible to at 14 total test over the snown Bullet - in our - ; sections Alternating 133 1 1 2 31 3195

Light Colored Colored Planum 2 get par two last of her than a teach this a 1 - 04 127 5

Le Stam tauty for litest for General THUS OF Miam planed an ideal observation and As alternal University is erimental tasks as of Bing Kitch that in the notice of the present The Liversit Sit I have Same. and the second of the first section from the first section of the ' it I aid the little wooslen structure to its marphal for the orasion.

I'm recreation sale of Bang Ahen would have an ited a research farmer. It was surrounded by experimental plots of stear and tebacco, seviences archeur, gere vegetable, with an are in the most thought, we in The spillings was fireful, it defil property and war ply 1, these trops of a superof the olpe path and the equility tathe arlyantage of access to a concentration. ist reat-tay Bangkuk to at other

Not "Plash" in Aliana

the community of an interior For the tangent lies and on some conarmiestinker te som tigtere b we and the contract from a Chinese The terms of the terms of the state of the s

As tell a he hand (b) name was See P I am but from the start the exemptor called it "Feur Corpers," and dollard the willto the restriction rate? Copy One Long China the first that the second of the second

The state of the s left next to everything to be bottom to a was pitched in a process result of the Westber persisted. Tall send room and a sharply that Pather Heyder was your to burn his chromometers to protect facility and



Rifleman in His bothele Gives the Charese Eclipse Camp a Front-line Touch

To add the first tool to the Weakers of the against annual territories of the territories. The territories are the territories and the territories and the territories are the territories.

the case were made. There were bandits on the proxi-

The Bernu team ran into prised troubles
I essessual that the step over at lines
has went they a make the step out to a comson tribute to make a good the state one to make
the range of the prised of the state of the make
the range of the prised of the state of the
the range of the prised of the state of the
the range of the will be the first of the

the or the ring of pent, incidentally, never that the up. There was hard to strength work by W. Robert Moore of the National Geography Short start the product was sent step at h. in the task, by a special arter force.

The state of the property of the complaint with the construct of the property of the construction of the c

The find to genting organized at the closely various site put the Halbach party on its mettle at the very order The location was on an 800-foot bill only life a mile from the main highway (Mousei - Roul to Man La, 1, but the countries has tackly be grown with hunton and the best grown with a mile truls except those left by wild boars. A "jeep-slife" tradway, however primitive, had to be constructed to make the observation size a reside

A native contractor was approached. He estimated to mail build the road in three word. That was to much the Hallas a and his second inscommend. Rev E. Headerman, recruited a crew of Burmese workers and ware into the construction business, undiscount into the construction business, undiscount in his

his real of taking three weeks, the had not true day. The result model is with many regiments wrote, including the entire assistant and turned force a terrace constant of the attention of the content of the mater, that Hallmeh Henderson Turnpake, was a second detailed on the "turn

The agence in Burnese we says charged the observation knows and the last the constant water the same leaves, complete with write a constant the sale to open on the casters ke where the sale trail would start. Both in shack and roac



In Washington. Dr Lymin J. Hritte. Director of Omeration be spec Studies deans from Supermitted Butter House The interest of the best of the second of the second second second in the second second second in the second secon



1 on Bushweck Page 11 W ED 3-



"Tell You What Wa're Good to Do, "Says Charlie Pak, korean Translator

Solare particular to the Spirepres Profet Historia Committee of the contract o "or hand the parties of the property of the parties of the parties

non-truction, their work was but third easier by the large red ants and the leethes abounding in the vicingly,

An Election Bows to the Pelipse

The pattern in Kerea had its own distinctitle mobes

Attack to Mind I was a darked to see I then I like the tree I that I the Court of 1 - - वास र कि इस निवास के कि कि कि कि कि this repeat to be seen foliable, the grant to a military in the file of the second by the TWO PERSONS ASSESSED FOR THE PROPERTY OF THE PARTY OF THE s to the steer falled. In his or so rest of the control of the father the same not train Sajas ple - to sailing Kar big will educe at the st The structure of the first section of the section o L'UN S L A CH SER HILL STIP L STREET PLAN NOTICE OF PAGE produce the risk of the relationships

determined the first relation of the fact 4.T.1 1 co. 25, 35 1 (11.1 %)

As Dr. Van biesbroerk relates it: "The General at once decided to have the elections paypened one day to avoid the call crossed Ally to it differs that last it required the the relies for the proper that the forcest No notes presente, median of hims bell as i. Povia i destabilitaria di propi da je pre-

The war in a property of the property of be you the Bergmank and her after serve of the an especial such that I will, to half ligrored size, you had will The there is no be the sections of term and Trage bond to a faith until they the restricted a kindly farmer. As so in as he unar at the protfers, the old native led the party was to be sold to the ment which than the formula I seem to the first to the first

provided the new Mas for thought I'm erry the orangers its for use of the land The rent the owier alpubiled may serve as a

* See ! With the U - Am - A - C C Comme fold M. Hodre, N. N. Island Maria HI III



1 1 1 5

Biby's Picture Proves a Powerful Persuader; Pstrybady Wants One Like Ji

When the bound to the british is a little of and a little of the property of the second and the

The least that I'm View Blashound or - with a relation to the first the least of school of the field the first of the firs

With the sessance of property of the Yan Breshouk has sent by problem to the first of the according to the contract of the con

Is her live to be a sure of the form of th

such the compact of the line o

Relation we excellent that it is a fine of the beautiful assessment is stand, populated letters to the excellent to the will be a control of the excellent control of the e

Herring Runes I.s Head

And some was not been the main. The contract was a some a thin some water as a line that we appear to the contract of materials in with the process to the observation location.

I that by a giver expert of the full or wall to the dig because of Japanese at the full of the full of

Wars the expedict to the establish of the Rillon backliber at we reput led by the equivalent terms of a large transfer of the formation of the formation of the section of the formation of the example of the original section.

Lig boats charming up the waters around the

island (page 350).

For weeks this apprehension about the catch appeared to be justified, but then came a series of record hauls prior to the exlipse. Families worked around the clock and the catch gave the island one of its most prosperous years in history. Long before E-Day, the eclipse expedition was being hailed as a harbinger of good fortune.

bor expedition members, the association with the fishing industry was not considered entirely a blessing. They worked in a redolent atmosphere. There was no escaping the inevitable fish scales. Fishwives were endlessly busy cleaning the catch, and fish were drying in the slow spring san everywhere. But the genuine good will of Robun's people more than compensated for the fishy atmosphere.

Herdache on kiska

It the Maripe " trackle was smalled with a capital is not be been the Mid trackment to special difficulties, but Commander Shelton found Kiska a head tehe from the start

His preselected of servation site was on the slopes of Kiska volcano, the snowy cone at the north end of the island, which T. S. Air Force pilots used for a "fix" before making their bombing runs on Japanese installations.

Commander Sachop soon learned, however, that the volcand slopes were still deadly with boddy traps and lead mines. Time was lacking for a complete demining job. Anything less thorough would be foolbardy; in the fogs, mists, and sudden show squalls expedition members might blumber off a narrow cleared line into dangerous areas. The hazard was too great.

Commander Shelton's report that Kiska volcano could not be used caused disappointment at Nathmal Geographic Society head-quarters in Washington and to Rear Admiral L. O. Colbert, Director of the Grast and Geodetic Survey. The sate selected was

nearly ideal for observations,

Instructions wont back to Commander Shelton to plan a new location along the northeast roast of the island

Air reconnaissance in a Navy PBY made Commander Shelton very door that this alternate site could be reached overland from Kiska Harbor, but he made a try.

The try deserves a story in itself. With a small party that included J. Baylor Roberts, photographer of the National Geographic Society's staff, he set out in two "wessel" tractors from kiska Harbor. The start was made

in drizzling rain. I be rain changed to an w. The sales became a blizzard.

thrown in was an Aleutian williams technically on the maki side, with the wind only 60 miles an hour; but a run still could

lean against it (page 370).

Battling the weather, the task force struggled on until it encountered terrain which to weasel could negotiate. In many hours of effort, Communder Shelt in hot been able to cover less than had of the 15 miles that separated the proposed observation site from Riska Harbor. It was obvious that transport and supply could not be mulatained for such a location.

With regret. Dr. Briggs and Admiral Colbert wrote off Kiska and rebutantly decided all the ground expedition eggs must be put into one Aleutian basket, with both teams con-

centrating on Adak.

The decision was not welcome, for high hope had been staked on the original plan of spacing the two beans on islands 250 miles apart. Now both would be on Adak, with less than eight miles between them, a small gap for had weather. The original Adak team was getting set up on 2,072-foot Mount Adagedak. The thwatted Kiean party prepared to make its stand on 3,900-foot Mount Moffett to the westward (page 30%).

While the Aleutian complications were imfolding, things were for iron humdrum else-

where along the eclipse arc.

In China, Father Heyden had good cause for regret that his expedition did not include a financial expert. Dizzy was a mild word by the currency inflation he found. Two dollars in U.S. money then meant nearly \$1,000,000 in Chinese. Even today Father Heyden is increduled when he recals the astronomical sums he distanted.

Luborers: \$24 000 a Day

Withhen who cleaned the observation site each terrived \$240,000 (Chinese) per day A shoeshine in Wakang cost at least \$40,000 and a roadside beggar would be insulted with a handout of less than \$20,000. Figgs brough \$8,000 opiece at hour Corners.

For his surprise, l'attlet Heyr en also found houseif cast in the fabrilous rele of paymaster

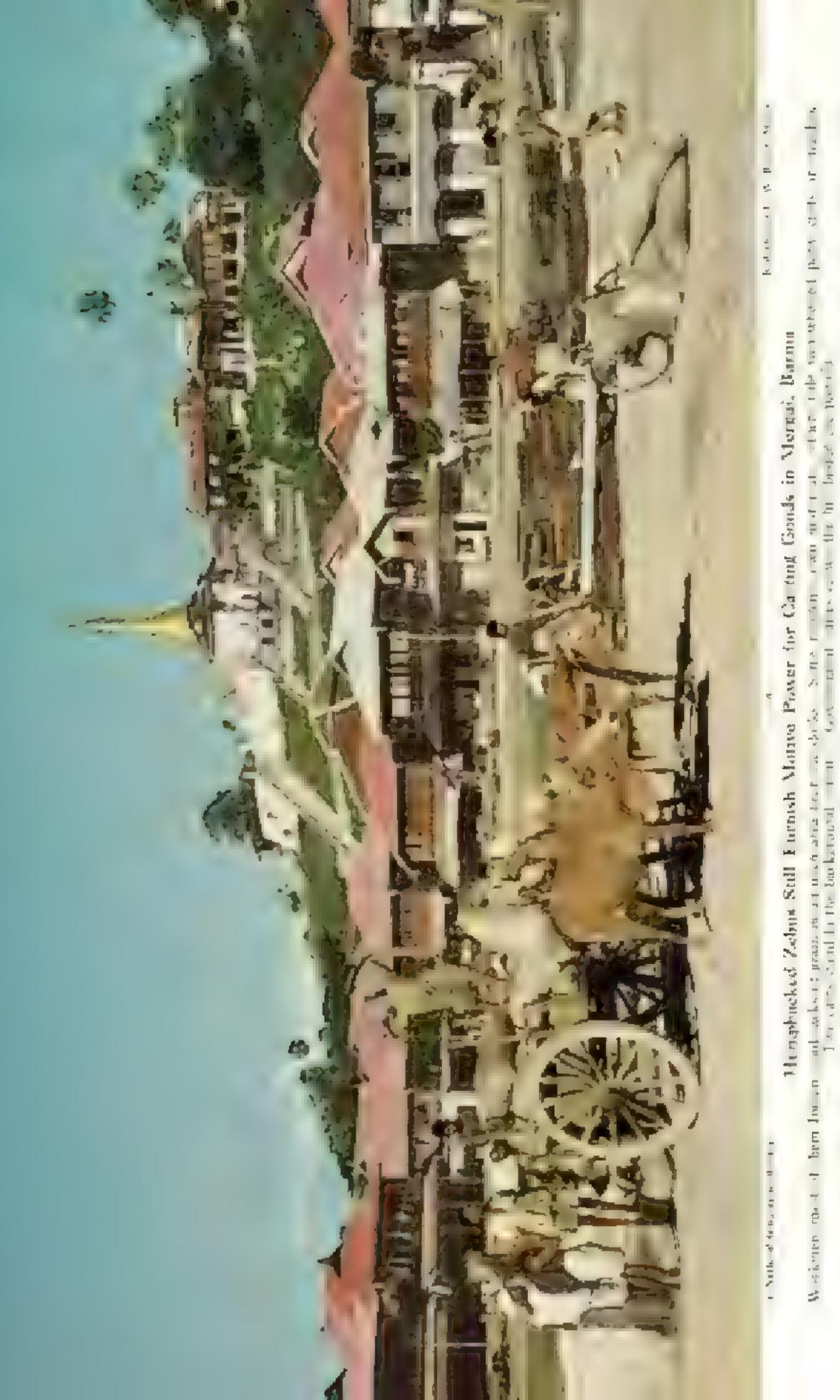
to a private "anny" (page 341).

Advance plans of the expedition had not auticipated need for troops, but reports of marked ing outlaw bands in the neighborhood

*See, in the National Germanius Magazine, 'B-raire by the round—the Lonely Akadiana, ' by Loneagle Davison, September, 1942; "Raddle of the Alexadians," by Isolat Wyle Hatchtoon, December, 1942, 'Exploring Aleutian Volkanoes," by C. D. Rolmson Letters &



Made of Brests, with Red Jaws Arepe Guird the Approach to Mergol's Gretering Page da for the form to the form t



to the principal

Mr. Traffe, at these by Studer Barrense Municip New Loak Shirt

and the first of the second of



the National Conferent like to Memore to Just

Thought the Residence of the Control of the Control

· Mo ning Stopping Linded, Merga, Wilcock Cart Away I needs Druits





Majestic Landmark in Bangkok in Lofty Wat Arun, "Temple of Dawn"

in production of the manual product in the second of the formula of the formula of the formula of the first o



spedit on Menthe + tryp In igner Nate. Grant Day of the Betterach



Green-faced Phys Ralm Lakes a Bire temp

Sample of the contract of the

Now forms of tour in the case we down the case of the

Son the may Son enticell, for the may Son enticell, for the major in the contraction of t

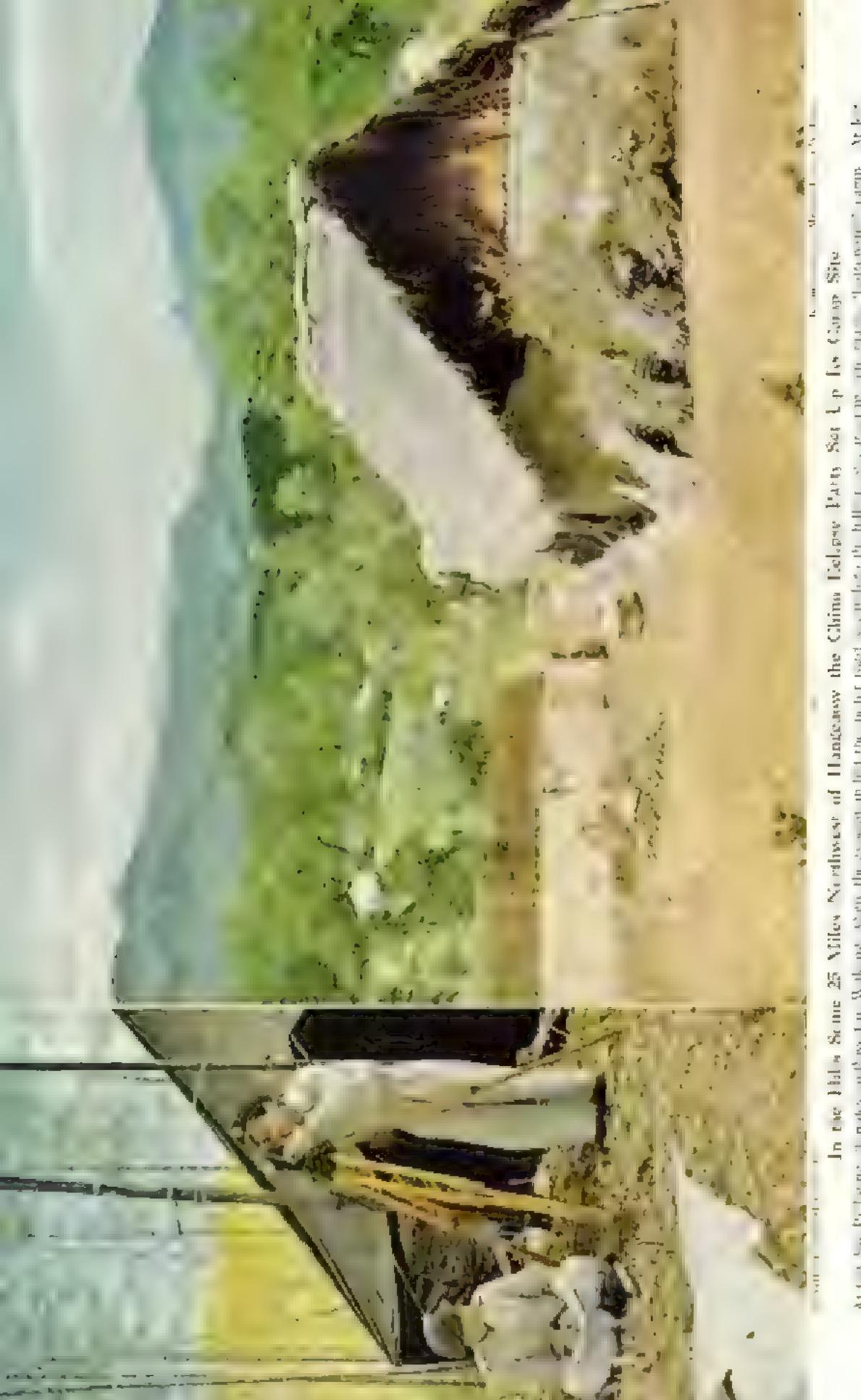
The product to the control of the co

L c le



Merchane to Antique Brees Grelle - ter the County on at a Backline Anta e the death of the death and fact by the elficial and it it is a Mouth in Yellow He bes and William Cillia the Flat

River to Moure Private Seek Peternally Strate from its Cilming Sun When Washing for Cremat as



As a tea for former a place and the second and the action to be readily while produced and the second and the best of the second and second and the second and second

Age threes to broth. It is the Tarmers Graphy of

The with a the browning to the all to the first the best of the first terms of the best of the first terms of terms of the first terms of terms of terms of terms of

To show goth the of the wall has to establish to be being well as the second of the se Ancy Sugar Cane Satisfier Yagest Connue Sugar T arts





The hones dalping P is s.

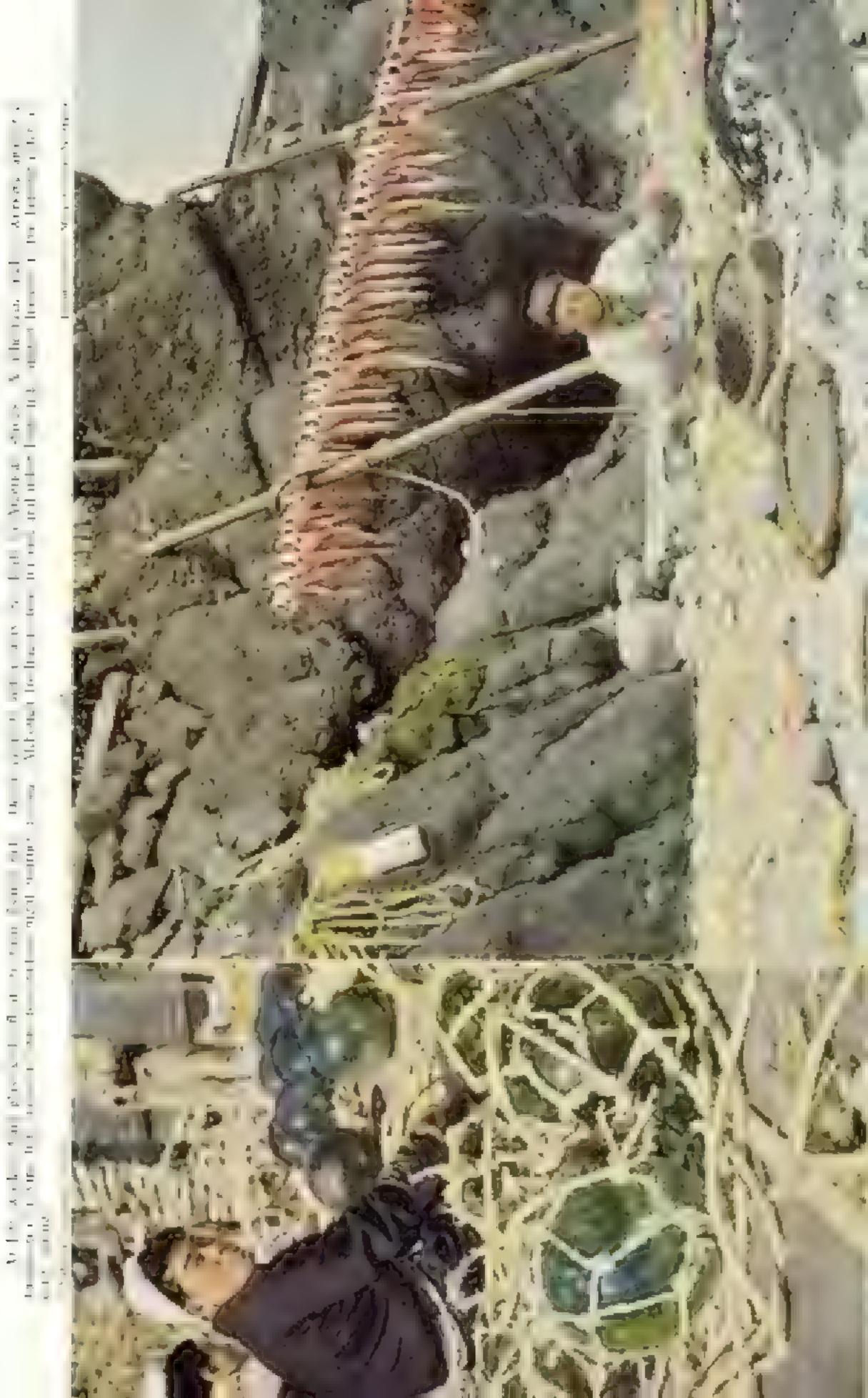
An choice Takes a Short Rest and a Leader Smoot Start in the start in

A Dest spoit mist of Astronomy, Cangraphy, and I riegally Relations.





britang at Rebin Island, the Lebes ी क्यां व्याप व्याप्त



F. lipse of No Talipse, Kalm



the 5m Pass into Lebipse

Manager and the same transfer of the same and the same an Harry of the Control of the Chapter Inc 1 1 and I see at 1 to 1 and 1 and 1 have the light of the Manager

15 Seconds to Annales tyl

The . I say a star to Pers THE A LIMIT FOR THE 2 Taken a 2 ag a trape a contract a last



suggested the wisdom of military protection

for the eclipse camp,

All cooperation local authorities promptly produced a grand detail, but the 17 young soldiers in it were so dispirited upon arrival that their protection value seemed dubious, to say the least,

It did not take long to learn why. Their pay was only \$5,000 a day, despite the high tost of living. With a Midastike gentre. Father likythm temedied matters. He gave all the soldiers a lavish 900 petrent raise, which brought their daily earnings to a mere \$50,000. Morale and efficiency skyr a keted

The armed gaineds remained a source of timeasiness throughout the pre-eclipse person, however. The young troops all secured to have itchy trigger inpers, and the casual way they handled hand grenades would try strong nerves. Petty largery also could not be over-looked, particularly with so much valuable scientific equipment about.

Nevertheless, the guards may have their own special niche in astronomical history, for this is believed the first time that protective machine-qual pests and ritle englishments were features of an eclipse expedition camp.

Attention, GPs1

Japan, too, came up with its own parcel of diverting news. Tokyo was out of place. The Pokyo-Yekonama, Japan, edition of the Pacific Story and Stripes he ultimed the tid ugfor occupation GI's with: "Do you know you aren't here? Attention: Tokyo is not where you think!"

The location error came to light during expluratory riscussions between scientists of the expenition and Japanese astronomers. From these it developed that the accepted position of Tokyo, starting point for all geodetic surveys of Japan and Korea, was, to fact, some thoughteet southeast of its true position.

This revelation was of prime importance. Use of the incorrect Tokya position in the advance project on of the central eclipse line arriss Korea and Japan, would have led to grave miscalculations. Same exact computation of this central line is essential for precise observations, catching the error saved the Onyo and Rebun expeditions from being located for "off base" on E-Day.

The scientific explanation for Tokyo's infelocation is lengthy. Briefly, the mountains and a her irregular land masses near the jupanese capital combine to pull the plambline out of its truly vertical position. This introduces an error in the latitude and longitude readings obtained by observing the stars

In the steady flow of other progress reports

to Washington, dema kept cropping up that were neither scientific may relevant,

Lante 638 Years

from flurma came one dispatch announcing the expedition had just lost 638 years and was soaking wet. This and such intelligence was elaborated by the explanation that the durmess New Year of 1310 had just arrived ushering in the teachtional Water Festival

During the celebration, Burmese douse one another with water, much in the same gala spirit that Westerners ling confetti and streamers on New Year's Fve or at carnival time. The individual who falls to get at least a little moist during the festivities basn't a friend in the country.

The three-day refebration was a signal for the Burmese workers at the expedition camp to quit work, and all the labor performed during the interval was by members of the party. Mr. Halbach and his assistants were aretalised repeatedly by their hallday-marking workers and other good-natured Kurmese as they traveled to or from the observation site

The Sam party also was treated to a festival, though on a more formal, less damp side. It was 'on locate n' in time for the clutted kite-flying season and its members jumped at the chaine to build kites of their own and join in the sport. Their most ambitious entry was a model tarely seen in Bangkok skies—a large box kite, bearing the legend 'NGS."

The box kite, however, tid not remain I mg in the control of its creature. Once they has it aloft, the rusor equipped pitate kite of some bitmese sawed through its line and it segred off free. I apolition members saw it up the in the skies on subsequent days, but definitely operating under new management.

Astronomers Lose Face—and Heads

For the classer in nessential footnate in this series, perhaps the prize should go to the Class party for resurrecting one of astronomy's forgotten legends

The One Long Claub observation site was located in the same area where the first recorded eclapse in world history was acted wound the middle of the 12nd century at a And on that exlipse bengs the story.

According to uncient Chinese annals, the for I astronomers at the time were a pair med IIsi and Ho. Takir deties were to savage the approach of an eclipse and then when it was at hand, to sound the alarm so that going could be besten to frighten off the heavenly dragon which, so it was believed was trying to swill we the sun (page 343)



Dr. Genrge Van Bieshroeck Takes His Sights Beneath Three I tags

Of Clove and the flave of Korea and the North Complete of the Sun-Mount fibe the of the Was used in a sense of the discussion the confirm the condition of

Hsi and Ho, the chronicles indicate, proved efficient royal servants in determining the approximate time of the eclipse's arrival, but then they started a mutual round of congratulations on their superior skill and knowledge. There were many toasts. The beganning of the eclipse found them, the old chron it is nawfelly relates, 'sank in wing and worse.

As a result of their deresident was not percent, the trainer of aim was not prepared, and great confusion swept the superstitions populate. The Empeter of Chira was so angry he took drastic action he had both Hsi and Ho belonded. (Astronamers, it is understoon, have been most discrete ever since.)

B-29's Get on Legention

to the two beautiful spirit and the fine spirit about the three spirit about the time the result.

rected Chinese legend was causing chuckles.

Arriving on the Island of Sherova a little that then two weeks before the eclipse, the R is easier members found no cause for near ment. Racced was the word for their situation.

The nutine work of aircraft main entine came close to being a nightnure. Most main-tenance had to be come out to the open by crew members, with a 50-mile wind blowing across the blowing partons.

A supply of spare parts never arrived, so the crews were breed to provides of improvement, fabricating the needed replacement arms out of descarded metal equipment the ferreted out around the Shemya hase. A special electronics shop was set up from security and an extra supply of power was conjuged up a mehow. The work get dene.

As the B-29's took over on Sheniya, the ground Shotan crows which accompanied them set up statume on the is ands of Amehitka (page 304) and Tanaga. Sheran for shorts

range navigation) is the system whereby rather signals are exchanged between nirerast and ground stations, making possible accurate elementation of the plane's distance from

the ground transmitter.

Getting the mission shaken down took less time than its difficulties would indicate, and the Superforts embarked on a series of test rights, crissrossing the 180th meridian is check Shoran's behavior. The equipment functioned with Edelity and the airborne positions of the planes could be plotted with satisfactory accuracy on the earth's surface below

On one of the test flights at cagine on one R-29 caught tire, but the blaze was estimulaished and the pilot brought his ship in with-

out further trouble.

Meanwhile, for all hands from Barma to Alaska, the time was drawing closer.

F-Week-and Tromble

E-Week finally arrived. There was much scanning of long-range weather (recusts Along the maxi-thousand-mile eclipse path teams went through a final series of rehearsals. Instruments and equipment were checked for the handredth time. One after another, ground party leaders radioed National Geographic Society headquarters that everything was in readness—and fingers duly on seed.

Then couble began to hatch with a vengenace. To Dr. Brugs came an argent message from Major Wynam reporting that heavy interference was blanketing all radio channels assigned for B-19 use, making it impossible for the planes to receive the till-important time stands. Wyman said that unless a new continuous time-sagual broadenst could be prranged on a different frequency, the althorne eclipse mission should be abandoned.

That was Wednesday. The eclipse was doe the following Saturday. For the moment it looked as if de trail blazing B-29 experiment was documed. Arranging for the special facilities Wymin needed was a tall order on other

72 hours' notice.

But in two days of intensive activity monatains of red tape were moved technical roll, culties overcome, administrative short cuts created. By sundown Thursday, thanks to rus peration extended by Secretary of State Leorge C. Marshall, the State Department's powerful station in Hawaii had started to transmit continuous time agains on the requested new channel, the H-24's were receiving them successfully and raced the Superfort time theck now accurate down to a split second.

But the elation at National Geographic Society be objecters was short-level. A reward for greater threat to any said to a

servations had arisen. The son studently empted with a severe outburst of sunspit activity. Heavy tadio storms resulted, playing havor with wireless communications. The big question now became whether may observation team could receive the vital time-signal broadcasts through this tempest of static.

Standards were not optimistic. All signs seemed to indicate that the radio store is would grow more intense as collipse time approached. The outlook was considered particularly poor

or the Alcution area.

By eclipse eve the forecasters' persiminary appeared more than justimed. Washington time signals were not even getting through to the Federal Communications Commission's station at Grand Island, Nebraska,

E-Day dawned a clear and sunny Sauceday in Washington and battered hopes revived slightly. The Butest of Standards reported slackening sunspot activity and an easing of severe radio storms. Time signals were given a "good" chance of getting through, although experts warned that a renewal of vickent disturbances remained a definite bazard.

Finel advance weather forecasts logan to trickle in from the observation sites. Though not ideal, they were far from discouraging

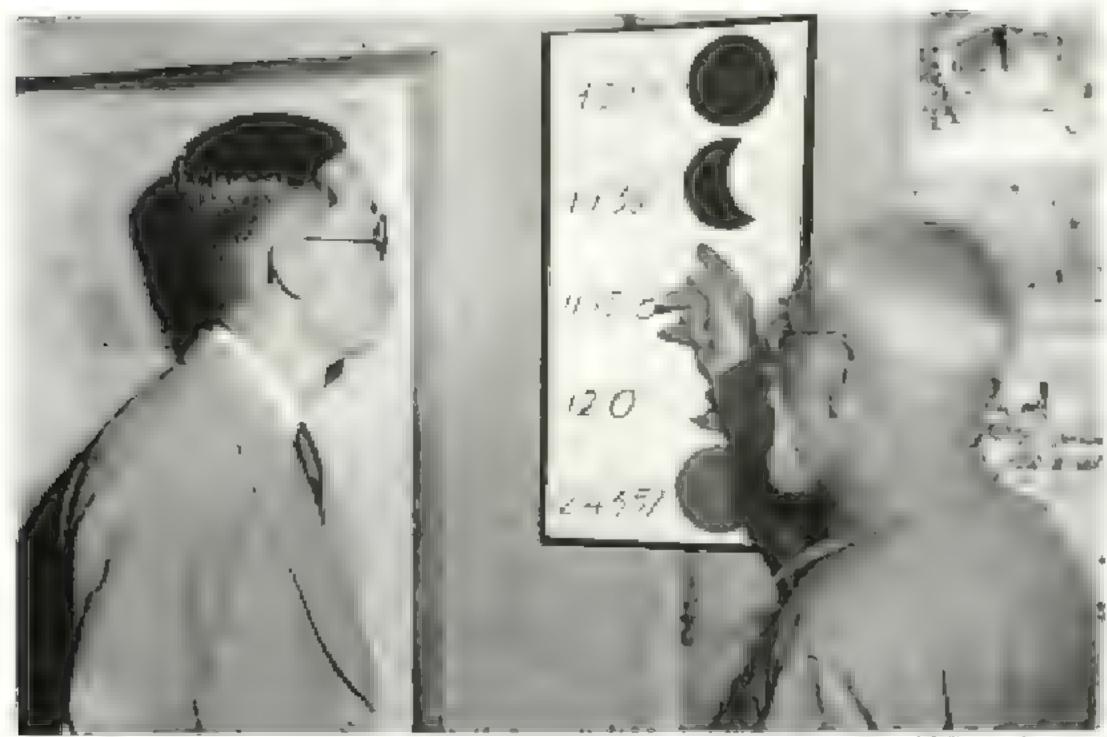
Stand By for the Plaster

These reports in, there was nothing to do but wait. Whit on what the threatening sunspots right do. What on the uncertain sugaries of the weather at the observation points. Whit, finally, for the flush reports of results from the field.

The role of Dr. Briggs in the over-all project might be compared with that of a chief of stuff in a unitary undertaking. At the planning and preparations were complete. Operation believe was now in progress. The auxious nours had rome. Time, as the GFs used to say, to "sweat it out."

This was to be a long-drawn-out process. The first eclipse contact at Mergul came at 6:35 p. m. (Eastern Standard Time), the last in the Aleitans five hours later. But the coming work on. No news. Midnight passed a boson of the first shortly after midnight. I first out the science and suspense. Bangkok reporting:

TENPITE MASSING MONSOON CLOUIS PHOT CONTACT RECORDED SUCCESSFIELY THROUGH THIN CIRRES CLOUIS STOP ASTER \$100 TENEST CON TACT SECOND CONTACT AND MOST ANNULARITY REDORDED BUT THIRD CONTACT PROLLI MATICAL STOP TIME SIGNALS RECORDED STOP PARTY JUBILANT,



Di biger & Wangap as force to a

Last and West Get Logether for Shop Talk Before Lelipse Day

Perf. Kwent Name I am of Nov., Nov. in the latens as Isr. You bushoock refers to a chart tening the eclipse places (Kot an loca time. I wrows positing to the new fudgate the bests. In no of the first and last contacts of the eclipse.

These were heartening tidings. But what if the other starious? The small boars of Sunday morning pladded on to cawa. Nothing further. The cook was edging toward to a

At long last, the story began to not folwith a rush, and the first instalments made may sleepe reading

from Kores.

CALILIES NO RECURSISATION

Dr. Briggs such d wryly at that revices and commented that he testains' could not accuse Dr. Van Dusbrock of wasting words. From Wukang

SOTIA CLOUD CIVIN SICE BEITIN INCK

From the Alegtian

ANYORAR FERO STOP MORPETT PASSIBILITY OF COSTACT FRASC PRIME THEFTH SUN PARTICLES OF COSTACT PRASC SOFT AND DEBTAGE NAME OF STOP SESSE PRIME OF SECURITIES OF SESSES OF SERVICES OF SESSES OF SESSES

You the store stood! one; one; three, Promising results at one station. Very dubi-

ous results at a second. Negative results at the other three.

Disappointment fined D. Leves - Late (page 332). "It inks as if we are englober out this time," he said rever the liberary message virtually persuaded him he was right. It was the first in a mach delayed series of todograms from Rebon and direct enes the general gloom with the news.

TWO IN URS DEFORE TOTALS, WEATHER POET.

III Fort me Releases

But swiftly on the heels of this dispatch tame a rush of others. The weather at Rebun had started to break up. Skies clearing then the hell-ranging news:

PURPLET WEATHER STIP MINOR CLOSE ON A CONTROL OF THE PURPLET BUTTERS OF THE STIP MINOR CLOSE OF THE STIP MILE STIP SCIENTISTS WITE STIP II.

Operation believe was not a furtare of all forcess at Relon and at Band.

Tourneer, the hope that a sort of the surveys of southeast Asia with those of Japan and probably Keren. There was a possibility too, of salvaging something from the photo-



There is the transfer that the transfer the

craphic record made from Mount Muffett In the Alexians. Burma and the B-29's were yet to be heard from.

The Burma report eventually came through after many hours' delay in transit. At the time it gave no cause for elation with its terse:

RESULTS DOUBTICE SOME CLOUDS

That left only the B-29 mission. The story of the Superforts was destined to remain unknown for days, wrapped in a baliling blanket of silence.

Communication difficulties, due to radio storms, thwarted repeated efforts to contact the mission at its Aleutian airbase. And when communications were restored, the big phase had already departed for their home station in Florida. Dr. briggs was nettled by the suspense.

The Unknown Story

Masterminding the work of multiple eclipse expeditions by remote control from the National Geographic Society's headquarters, thousands of miles away, was an exasperating business. Even the most encumualing radio-grants left witch to be desired

Had global television been available, there was an intensely varied pictorial narrative

that might have been transmitted.

At Mergni, Mr. Hall ach and his assistants were up hours before dawn to find the skies thickly banked with forbidding monsoon clouds, and the threat of rain in the air. The trip to the bandson-and-palm observation stack was made through brooding tropical darkness.

With dawn the two large panels in the castern wall of the shock were swring open to give the comera a clear range of the memina sky, and the party was cheered by the appearance of a few rifts in the heavy canopy of clouds,

It was through one of these opporture raits that the first contact of sure and more was analyte. Seconds later, however, the tailis descended in carnest, staining them on the remote plugle cutpost. Prospects for any further observations looked bleak and damp.

But Halbach had the equivalent of a rabbit's foot in his pocket. Just as the time neared for the important second and thirst contacts, the rain ceased momentarily and another fleeting but providentially timed break opened the thick to me.

While it lasted, the expedition was able to eatch the vital interval of the two central contacts. This seat spirits southing

As if on a timetable, the morsoon rains

promptly resumed. Across the countryside during the hour-long final phase of the eclipse. Burnese natives contrated to believe the trutks of food trees with strut cudgels la accordance with the tineworn tradition that a tree heaten during the darkening of the sun will have a more bountiful yield.

This quaint cogrom contrasted with the about schutific interest of the five faculty members from the University of Rangoon who clustered about the equipment in the

observation strack.

There was no lacky break on the fourth and final contact. When that mament arrived, torrential rain completely obscured the sun For the Mergui team, Operation Edipse was over.

Had the exact extent of Halbach's success been known then in Washington, it would have been cause for jubilitation, instead of having somewhat the upposite effect. The reason for the strange understatement of the flish report was explained weeks later.

To expedite the disputch of the report, Hallach had prepared in advance three "canner," messages to cover major contingencies. One was for complete success, one for complete failure, and the third for uncertain results due to the probability of cloud trouble.

When the fourth contact ended, there was no time to draft a more complete report, so blaibach immediately sept a sleet Eurose runner tack the 18 males of the road to Metgui with instructions to the telegraph operator there to get the inadequate message No. 3 speeding of tout the wires.

Again, Fiekle Weather

Like Burms, the Bargkok story proved one of fickle weather. Forsiking the comforts of their metropolitan botch, the members of the party camped out oversight at the site to make sure all would be on band, without (all, well in advance of colipse time.

"We awake to find it raining." Professor Smiley relates, "but it began to clear about 6.30 a. m., half an hour before first contact time. Just as the evilpse was about to start, a huge cumulus cloud moved to one side and we were able to photograph the first contact through a thin circus vell.

"I ben am ther large contides cloud moved in front of the sun, and it was alp and tock whether it would be out of the way in time for the important second and third contacts

"It was a tense moment, but the sun was again in the clear when it was time to start the camera to record the manage before annularity, the 32 seconds of montanty, and the minute after. Another large canadias cloud



Rom Pudoles - Lusso Streets Serve as Mirrors for the Salar Show

The I there was the transfer of the Property o dan a radial for the same of the same

The second of th the same of a third of collar actived

the late to the work of the ugh .åπ i ∈ 110 - opts.

interactors of a material term to bur building of the action I Samts. Be for the live of the tage heer somewhat lampened had expedition members kt (wit that the "thirt ecoe" of compiles elecall to consider a time where a be the first of the first period of the is a lewest that it has statement to blur, he experition of the talket contact

The Grandins Show No Meres

In slar a contrast to the habilation of Illian Emply the script of Wakang was one of the reand frustration. Father Heart stor in the the instruments after by the still the ो । । पर न्त्री के की भिक्तान restricted to the second at the owner of the the termination tains of the plant of the plant of

 or still and the element to all mulates.
 or still and the ed pse programmed. the state of the entire but the en-DESA 7 4 | 1 (2.5)

> Having ruined the eclipse for the exploration the greating of the Diety Tracks (repair come fel a fe for the law to be a fill taken for the Some were a real for the contraction large a grant to the second of the feet that related to the management of the second the telephone of the kind of the to the street of the perto the transfer that the transfer of the 151 None by take the letters and the the appearance of the last testing and the same

> hard and and a surface that when find the King of the Line anders to a bullion

> The way through a many trip Mer a Ard receipt Inc THE PERSON AND A PROPERTY OF THE PERSON section that is a martial to the plant 11 | | |

I twentill list in a file to be early

faintly the nursowing crescent of the sunwhen the clouds were a little less beavy.

"Many people crowded around our whe feace with great interest, but they respected our request for silence at the central phase. All second impressed by the eeric darkness. which exept over the land, and they marveled at the precision of our advance predictions as to the exact times of the orligen (page 350).

"When all was done, it was plun that this throng of Korean friends was sharing out

disappointment."

Despite the unfavorable weather conditions Dr. Van bieshtreik did manage to get a short run of film during a partial phase, and, in the over-all undertaking, every such bit helped

Rebun "Prays Away" the Weather

At Renga, the weather tables finally turned in layor of the scientists, although not until

after many anxieus hours,

All during eclipse week the fisherfolk of the rouged yet scenic island had been offering prayers for fair weather and tite success. of the expedition's observations. On the eveof F Hay all work was halted on Rehan for a time while its people effected up a finaspecial prayer for this intent's a (opposite).

Even the most devout, however, may have felt grave doubt, about the efficacy of this mass prayer when the E-Day weather did arrive. It statined all night, whipping up beavy was which patituded Rebuits packy singeline. Dawn frind the west ar still foul. Skies were gray and learen. A cold drizzling rain slitted down cheerlessly. Two hours before first contact time there was not the vaguest lint of a sun in the heavens.

The state seemed set for a crosbing and climax. Rebun's hamlets had been bedecked with gay posters in had the collipse occasion. A special postal cancellation stamp had been authorized to comment rate the event. In addition to the National Geographic Sci. 25. expedition, there were representatives at some 17 Japanese scientations intent on studying various aspects of the solar plus-

DODGEDS D.

Flaborate press coverage arrangements had been made, and special communication facilities set up. There were so many correspondents, American and Japanese, on the scene, that it had been necessary to restrict to ZZ the number permuted in the observation area during the eclipse. One Japanese vernaralus paper alone had 25 reporters and photographers on hand to cover the story and wired picture equipment was installed to which photos to Tokyo in six minutes (page 371).

Even the police of crimeless Rebun were anticipating a memorable day. Reads in the vicinity of the observation area had been closed off. Special regulations had been issued for handling the unprecedented influx of visifors and specialors.

All these preparations—and now about-

nable weather.

Nor dad the weather show any signs of Freaking. Olishore the Japan Travel Burenu ship, Hakunan Maru, with its load of Japanese. eclipse seekees, pitched and tossed forluraly in the turbulent seas. When the U.S. destroyer Orleck arrived with a final contingent of newspapermen and photographers from Taken, the wear were so rough that there was doubt personael could be landed.

Then, capriciously, it happened. The wind sudgenly began to freshen. It picked up until it was flowing about 30 knots. It because so strong that it blew completely out of the water a six-place rul ber konding boat which was moreed to the Orieck's boom. And the

wind was blowing aloft, for

Breaks started to appear in the cloud crit ing. Patches of blue sky showed through. and glimpses of the sun. The ritts widened Soon the beavens were clear, except for a few small errors clouds. Across the wide rathuel from Return, Rishit emerged from the mists, its mile-high so weeled cone a spectacle of beautiful symmetry.

Clear Skies on Schodule.

If the weather shift had been ordered by the scientists on Rebun, they could so t have timed it with greater needs

As the colipse began, the rocky hillside do ring down to the shore-front observation area was crowded with an intent gallery of speciators—solemn-faced youngsters from the sland, their equally interested elders, the inevita de battery of amateur photographers suppoint away with their chmerus, students with notebooks or sketch paris in their hands -and, of course, a few of Rel un's "finest," on hand to preserve law and order.

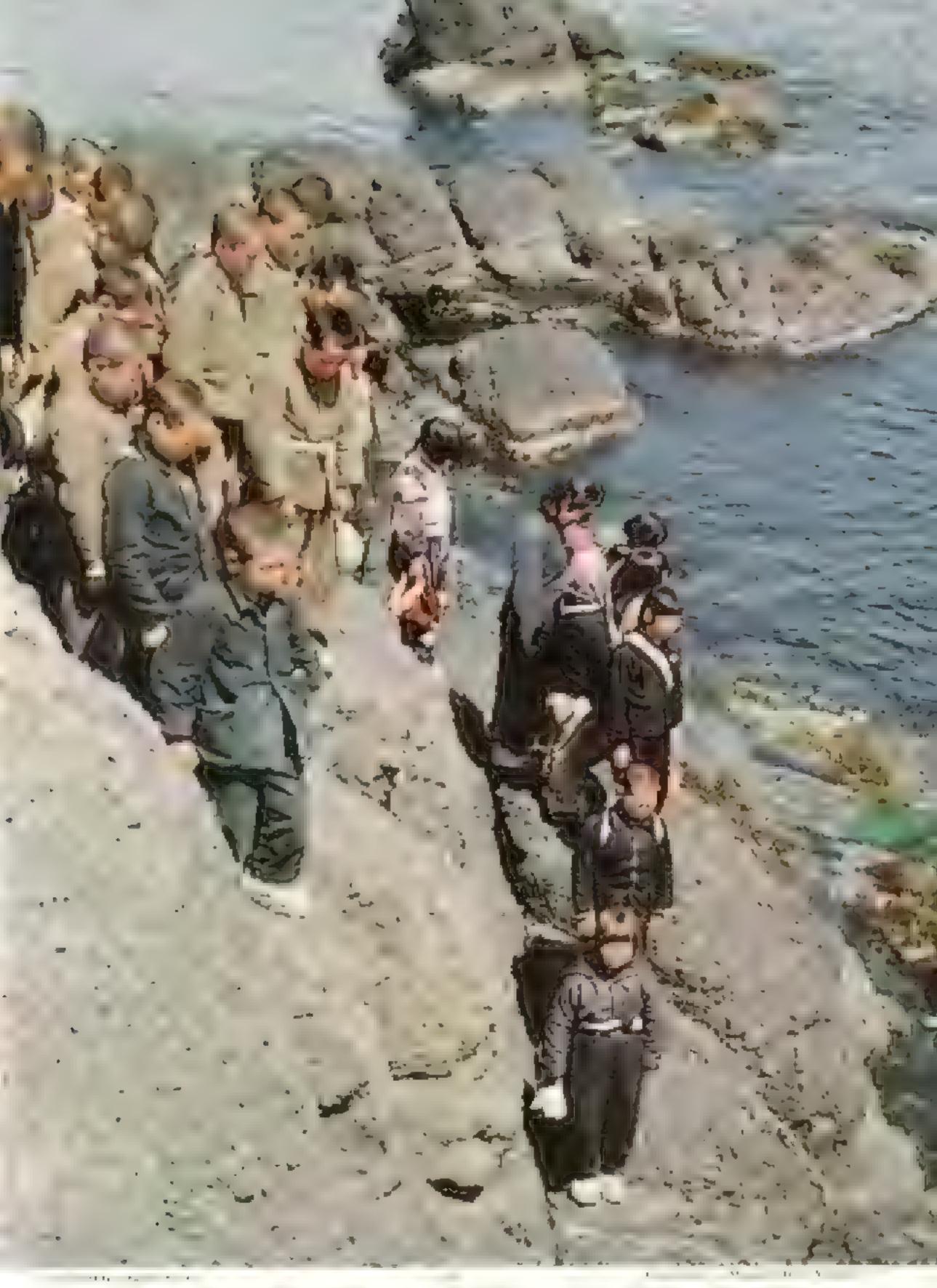
The say was almost the idless for the first

three courters

With sugh at few clouds approached the sun when the fourth contact neared, the camera was able to catch that total phase of fateroil fetween the clouds (page 332).

Members of the expedition disped one or other on the back. There was much shak

. If hands and exchange of congrutulations Beaming widely, Japanese scientists and technicians howed to each other in trianph atal spaced Dr. O Keefe. For Rebun this indeed was "d."



School 3 magners and Leader Rose in a Seaside Prayer for the Expeditor's Societies for a property of the Control of the Contro



Bally Rudes at at Minudles of Locals Chemical by Michael

the or the the free conjugate to the plant of the plant o

May the state of t

=

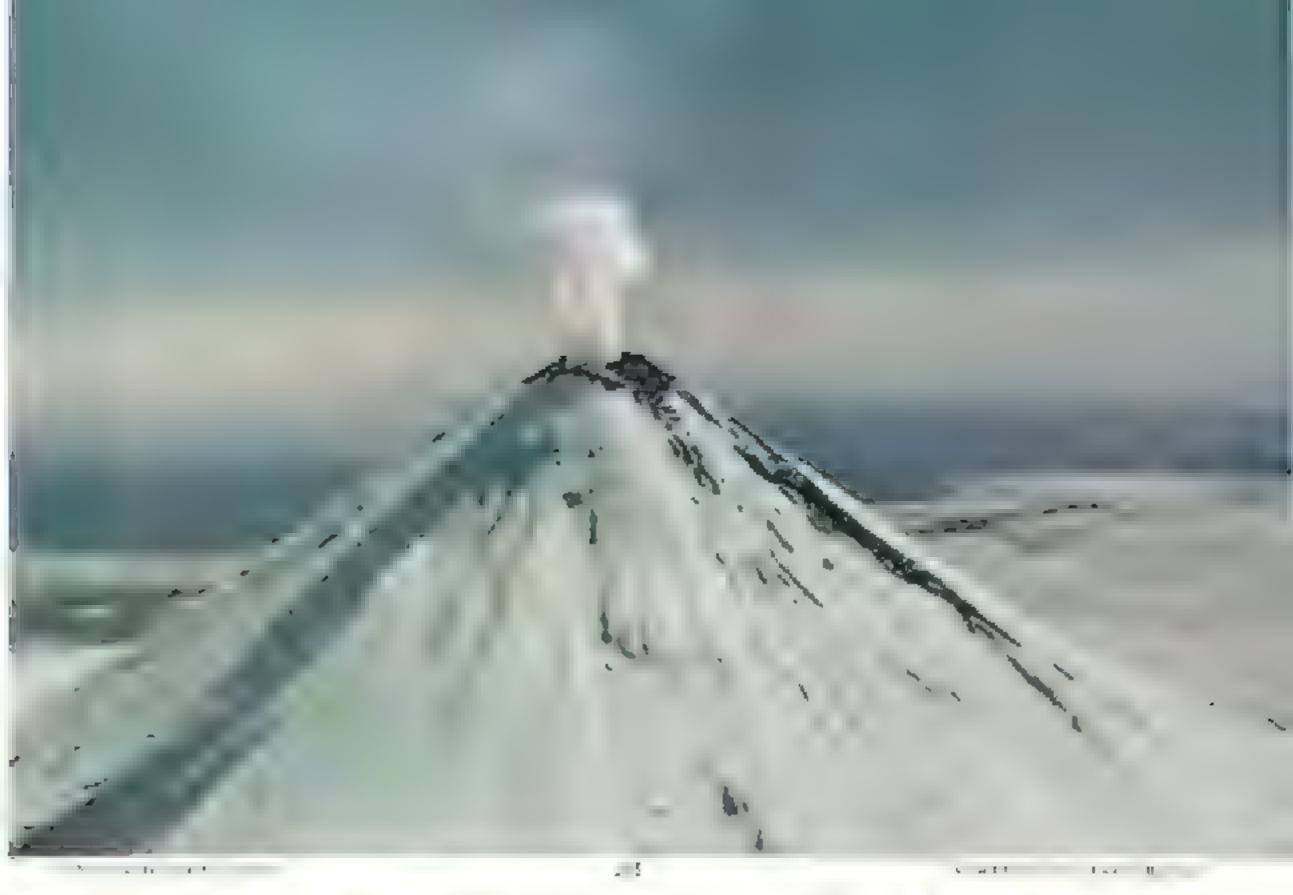


There there Wolfester week I as western Hollert Same of Helpan's be ut en



Heavy Coats Emphasize the Lace of Bales Weather on this "Hounds" Base

the same and a first the beautiful to the first that the first tha



* Highest Peak in the Micarian Chairs Is. Steading Snowin bed Shishalder

The property of Manage Pulsa part the object of the Manage Property of the Prince where the object of the Prince of the Prince

v Clast and Cendete Survey Vien Locate the Ydak Lelipse Sites

The is septembered to the distance of the product o





The contraction of the state of the species of the Chards Risabet the Meanings but The New Waverance Flux on the New of the Sun As and a life of



tamera Trass Rim Sommilia Steady, Says alle Ferens de Mount Adazaak

to skill or a says of the state of the fill fallication by

the skill of the says of the says

Two hard-working members of the National Geographic Society's field staff were on hand to participate in the automent of triumph. Mr Johnston, coordinator at Tokyo for all the Asiatic expeditions, arrived a few hours before the eclipse after a very stormy voyage. Waiting to greet him he found Dr. Williams, who had previously spent considerable time in Keren and China, assisting with the preparations of the eclipse teams at these locations.

Weather Gods Frown Again

A few hours after the eclipse passed Rebun, it was the Aleutians' turn, and the lil fort me which had dieged the ground particle and did at best again to spoil the accase in the scheduled celebration in the officers' cub on Adak after the eclipse turned out to be closer to a wake.

The treacherous Aberdian weather acted up as eclopse time approached. Located in a more westerly position, Commander Shelton's group had the first opport maty to "shoot" the plan unusum and got some padde film forage at the first contact. Then a driving snawstorm whopped down studdenly out of the colon, and the first contact.

phase and after.

sun could be seen intermittently through the wharling snowthakes and shredded clouds. The camera kept grinding all during annularity, but beavy clouds obscured the san at the critical moments. Matters improved nominately at the fourth contact, but after a few more feet of the had been exposed, the san was blotted out completely.

Clarence Saehous party on Meint Adagdak. The cules to the cust-portheast, fared even worse. Their location was weathered in solidly, and they got not a glampse of the

cclipse.

The big question on Adak that night was have had the 11-20's made out. Army and Navy pilots who had been in the air moving part of the eclipse reported everbearing snatches of 'lister, out' task between the two Superforts which indicated that things were going well but no obtolal report ever came through to larin. Goo. Frederick Kin He, Air borre Commander in the Alemans, from Major Wyman after the big planes had landed on Amehicka, an alternate base.

Both Anchitka and Shemya, the original later of the B-29's were represed with uprent messages. They came from General Kumble, from the Society, from Major Wyman's immediate superior or Washington.

No tephes came back from Amchitka or Shemya, tertil a final message elicited the

information that the B-29's had already de-

parted for home base in Florida

It developed later that Major Wyman bad filed his touting official reports and a long colipse dispatch to The Society immediately upon landing, but the sunspot storms had obliterated them in Itansmission and they never reached their destinations. The same freakish disturbances had kept the urgent inquiries from getting through to Maj * Wyman while he was on Amehitka. The experts at the Eureau of Standards had been all two correct in their warnings that radio storms would be but in the Aleutian area.

For four days the outcome of the B-29 mission remained an exasperating mystery.

Then all the confusion about the vanished reports and unreceived messages suddenly cleared up. Major Wyman returned to Washington and sat down with Dr. Briggs and a group of georetic and map experts to tell the R-29 story.

The Big Story Gets Told

And the B-29 story proved to be the most stirring and dramatic account to come out of Operation bulgese. It make a fitting climate to a great venture.

The flight plan worked out in arivance for the Superforts called for them to the their eclipse work at between 8 000 or 1 10,000

feet.

"This," explained Major Wyman, "Is the northum alattade required 300 days in the year to get on top of the Aleutian weather but on the other five days you have to go higher, sometimes much higher.

h Day, we found, was me of those five Maybe I should say say, since this is lesp

year."

When the B-29's came out on top of the regular overcast at about .0 300 feet, they did not meet clear weather with unlimited visitality, and a seeminally endless layer of base.

They groped higher Three onles. Four Five, Still the "soup" persisted.

Finally they brake into the clear, but still kept climbing to put a good rangin between themselves and the weather "roof" heneath them. Altimaters showed 29,000 feet.

Then a had moment came. In the rarefied atmosphere of the great be ght an engine c need out on one of the B-29's. The big ship was forced to drop flown 2,000 feet before the balky motor packed up again Fortunately, it give no further trouble.

The mission was carried out at those altitudes, one plane flying at 29 000 feet about ten takes about and 2,000 feet above the



This Curled-up Landing Strip Is the Artistic Work of an Alconon Williams

Williams of the compact part of the compact of the

second. But hillew an identical concertion operwalking the center line of the object and

At the final operating levels the weather was a lear and cold, with the outer term of colds in the colds a learners when the colds are was a learners of the accordance to the first and the learners of the accordance.

The cameras were not the only pre-eclipse ran problem. Pilots had to worry about con-

or is the property of the war introduction of the property of the controls of the lands of the l

" This Is It"

The real was one and still be extracted for the trace perceived the area emporement to the area world when the lower tarted to let into the edge of the respict on some

property as the property of th

The tree is the later tool a tickle he netwe-racking ioh. If you to empore their so little during the course of the wanted be enough to throw later of the



Japanese Newsreet Men on Rebun Shoot a Religgment of the Eclipse

Dominating the observation of the long take of the educe manna is given. The state of the product on the concessor (meht) which narrows he shows here. Then the state of the was fine shows he

tellipse mater and perhaps ruin chances for the mission's complete success. It had to be a sterry cruisse, and true

As the cameras greated in the gathering data is, a new dimentatore, due to the thin appear toposphere. With explosion on the them to track in the spin of the eclipse above as I have bother on the other

phers were tense seconds. The plant of phers were lashed in their positions, but that was no predicting what might happen should a dome blister give way and create a territor ressure change inside the aircraft. Similar of the past in the past in we sucked men and equipment out of presentiand planes to certain the control of presentiand planes to certain

Happely, widle the dome tiles can ked and granted, they neld. Shoran and time-signal equi uncut functioned or outley. The sheen of brightness crept back into the upper sk.es.

Then, abruptly, the ecli se run was over and to B-29 s, with their triumphant creases swooped down almost six miles to land on twohatka and dispatch the "Morrow to be plaited" reports which were never reserved.

Operating Peligne Entirenter Revised

The E-29 stray plus the subsequent receipt of more detailer information on the Mergulobservations were life. Briggs and his several near their unital long-range estimates on the results of the eclapse expeditions.

Understandably enough, the original estimates had been much on the conservative side

On the basis of first reports, the most be firiggs hoped for was but in the solution networks of Shon and property to be size and shape of the cast a

A moder accomplishment, this, an , one that any single of the contract of the contract of the

as a gratifying success. But it was stid somewhat on the disappointing side for the ambitions multiple enter, rise that had been at were so the

subsequent reports enhanced prospects substantially. It was no longer a question of a slogle stronge. Ruring promised a double check on the Lie from southeast Asia to Japan, possibly to Korea. The success at Kebun spend to posite so h a result.

The exciting development, of course, was the outcome in the Acutions, for an that singed the slender hope of obtaining new data on intercontinental distances between

North America and Asia,

The Long Job Ahead

Making scientifically sure of results as something far different from giving tentative esti-

mates of spot reports.

The work of evaluating and correlating scientific information produced by the several expeditions will require many months before any final report can be drafted. There are some 100,000 separate pictures of various or type phases to be studied and compared. Atmospheric conditions, sight variations in time signals, and other factors all must be taken into careful account.

The base preliminary preparation of the B-29 eclipse film, asone, took more than seven months of the most prostaking work

A gratious, if terse, progress report to Dr. Priggs gives grounds for more than restrained optimism on the ultimate verdict. It states "Results better than meter regions predictions send have sed as to believe. Most of the stations had a me neasure of success, and five of them produced results of great value namely. Mergui, Bangkok, Relain, and the Dr. B. Tr.

Whether the ultimate results turn out to be on the minimum or maximum side, two

things seem plaint

Mankind's knowledge of the size and shape of the earth stands to be bettered. And in the size and shape of the earth is the footrule, so to speak, by which man measures the universe wherem he lives.

A new distingues new technique in precise astronomical observations has been detrocated by the use of aircraft, and this should facilitate the future work of scientists intent on a brancing the cause of more accurate goog

And I also been a for put for all for all range and print graphing eclipses, but the data obtained lacked procise value because the plane's constantly changing position in

the sky could not be plotted continuously in terms of equivalent positions on the surface of the earth below.

The success of the airhorne operation beace askes on notable significance, for it promite to provide scientists with "edipse insurance for the expeditions that will be studying solar

blackouts in years to come,

In the past, astronomers have been fied to the ground because a stationary platform for instruments was believed necessary to obtain reliable data. And they have always been completely at the mercy of the weather—a few minutes of clouds and min have defeated countless expeditions, organized at great expense and offert.

New that the new acrial technique has demonstrated marked effectiveness, scientists can plan on using the moving platform of the airplane to supplement the observations made from stationary platforms on the ground. Moreover, the airplane gives them a veta over bad weather, because, except for the cases, aircraft can of the storms and places that would thwart

ground observers.

Taking a inautage of the new technique presents no insurmountable obstacles. Made on commercial transport planes are readily available for charter. They rould be fitted out privately with the necessary additional navigational and obstronic equipment. Instability of scientific instruments and care cras would be a comparatively simple task

Perhaps the day may come when puller sometime organizations, or groups of them, will maintain their own specially equipped aircraft for various phases of celestral research and other projects of exploration, just as some industrial firms and large newspapers do today for their special purposes.

"Calculated Risk" Justified

For the National Coographic Society and its 1,800,000 member-families, the 1948 eclapse thus may well be regarded as a memorable one. The Society sent out the largest confiding test team of expeditions yet to take the field for a blackout of the sun. It possessed again in spon-oring the use of high-altitude aircrast as a new approach to the problem of eclapse hunting. And this unprecedented ground-air combination obtained important as feature results.

The salcatific gan ble risked back in June 1947, and supported by The Society's membership, would appear to have been well-calculated and more than justified in its

relitins,

Exploring the Past in Panama

By Marthew W. Stirding

with and the all the court to the Be-Contain the North

Harra one's Na one' to people I being, and a R. hard H. N. sart

TEM ASSESS OF NEW YORK TO A FEBRUARY afternoon, and it was cold on the deck of the 5, 5, Amon as she showly eased down the Fast River. Snow covered the city.

Wearing light coats, since this was the only day we espected to need them, we shivered a while on deck, viewing the somber but beautiful sight, before descending to the grateful

warmth of our staterooms

Like migrating hirds, Gorden Willey, Richand H. Stewart, (Mrs.) Marion Stirling, and I were again heading wouth on our appual National Geographic Society-Smythsonian In--titution anche logical expedition, this time to western Timasul."

Our final destination was to be the Azuero Pennisula on the Pacific safe 160 road miles southwest of the Canal Zone (map, page 377).

From Snow to Tropic Sun

Two days later we were lounging on deck about as we sailed through sunny seas, there oughly enjoying the climatic contrast and the brief rest before plunging into the strem nowork ahead

At Colon, to our surprise and pleasure, we were met by a compatitlot, Karl Curti , v + i. tary ride, guale, and mentor of practically every scientific expedition that his visited Pansana in the post 25 years (page 375). In his car we rode across the lathmas to our hotel in Assum

On the pleasant two-hour drive from the Adaptic to the Pacific we were again impressed by contrast: this time, the case of modern travel as compared to the coassing by ragged. trail through hver-laden jungle.

One of the first mainland points to be touched by the Spaniards, the I-thinus of Phaania played from the start a leading part

in the opening of the New World !

Here or the wasp waist of the Americas was the obvious paint of acress to the shores of the great Pacific, first seen by Ba box from his "peak in Darièn." Here, Columbus stated, Spaniarus saw more signs of polit in two days. than they had a served in four years of explora ion in the West Insies.

Soun after the Spanishe's had looted fabucuts riches in gold from the native chiefs of Panama, the treasures of Pena were discovered. For years the wealth of the stricken country of the Lucias poured across the Isthmas. or the gold road from Old Pantons (Pantons) a) to Porte belo on its war to Spain

Then came the period of the Buccamers, of Renty Morgan and his "terrible men." The sack of Portobelo and of Old Lanama was a blow from which the Shanish Empire

Herer recovered.

In the middle of the 19th century this shortest constitueoust route revived, inagain the magic word "gold" was the coase. California mines started a new stream of treasure seekers across the lever stricken ladan s. In 1955 the transfel mian railroad was finished and the true became easy.

An uple story in itself is the construction and foul completion of the Panana Cand During this period Panassa became the foremost focus of research in tropical mericine, and continges to contribute much in this fier

torlay,

Cold Doomed Rich Native Culture

Almost best in this remanter background is the fact that at the time of the Conquest there flourished in Panama one of the richest and most colorful aborginal civilizations in America. As appeared in many other places. the very radiuess of the natives brought a sont their early decin.

Tantulizing but inadequate descriptions of these people have been left us by Goazalo de Badajoz and Gaspar de Espinosa, who, Letween 1515 and 1525, led louring expeditions into the region for which we were bound.

Center of greatest population and highest culture of Panama in pre-Cilumbian times. this area consists of the norrow, semiarid Packie coastal strip lying west of the Capal

" For accounts of presents Platfemil Geographic Smillsoniae expeditions, see the following Designment General mer Malaner meticke by Dr. Stilling, who is Obtef of the Paresa of Americal Ethnology, Smithsomen Instruction. "On the Trad of La Venta Man," February, 1945; "La Venta : Green Stone Tenere" see a leader of a leading of the second of t ena Swamp" (La Venta). November, 1942; "b ; ! non-Lamadia Burmal Alighi (species of Carried) (Gerro as las Mesas, Mexico) September, 14-11; "Great State Faces of the Mentan Jungle," Senteraher 1 oct, "Discovering the New World & Oldest Work of Man," Amost, 1907.

t See " Panama, Bridge of the World," by I am Mac rion. No. 10 was Ground affect Manager, November.



There Sine Sears with the Startages Some Sometal's Long Shows Wear and Lear the day to broke the property of the Startage of the latest latest the latest l



Out of a Tomb Dag Continues Ago Comes on Indian Growling State

In this to the constraint to be an expedition made, unit a Panamatian worker Arrive and the constraint to break into an earth. The birds were the general stone, put extends to the constraint of the constraint o

Zone (map, page 377). To this day most of the population of Pannua—outside of the caties of Pannua could be ended to canad and the miles at its concentrated bere-

Part loxically, this coast region is referred to as the 'Interior.' From the middle of the area juts the Azuero Pennsyla, one of the bargest peninsulas on the Pacific Coast south —: Is in California

The "Plains" of Panama

The visit of who receives his impression of Panaton for in passing through the jungle-clar Canal Zone is due for a change of viewpoint on traveling through the Laterior. Along tarbuse of the Americ Peninsula he might fanctherself on the plains of South Dako a rather than in the American Tropus

It present the principal industry of a feterior is cuttle to a. The rich is a

tiral potentialities are only partially developed, thirdly because of lack of a suitable market. Considerable excellent coffee is raised to it the Costa knear border, however, on the shoulders of the Chirlian whence.

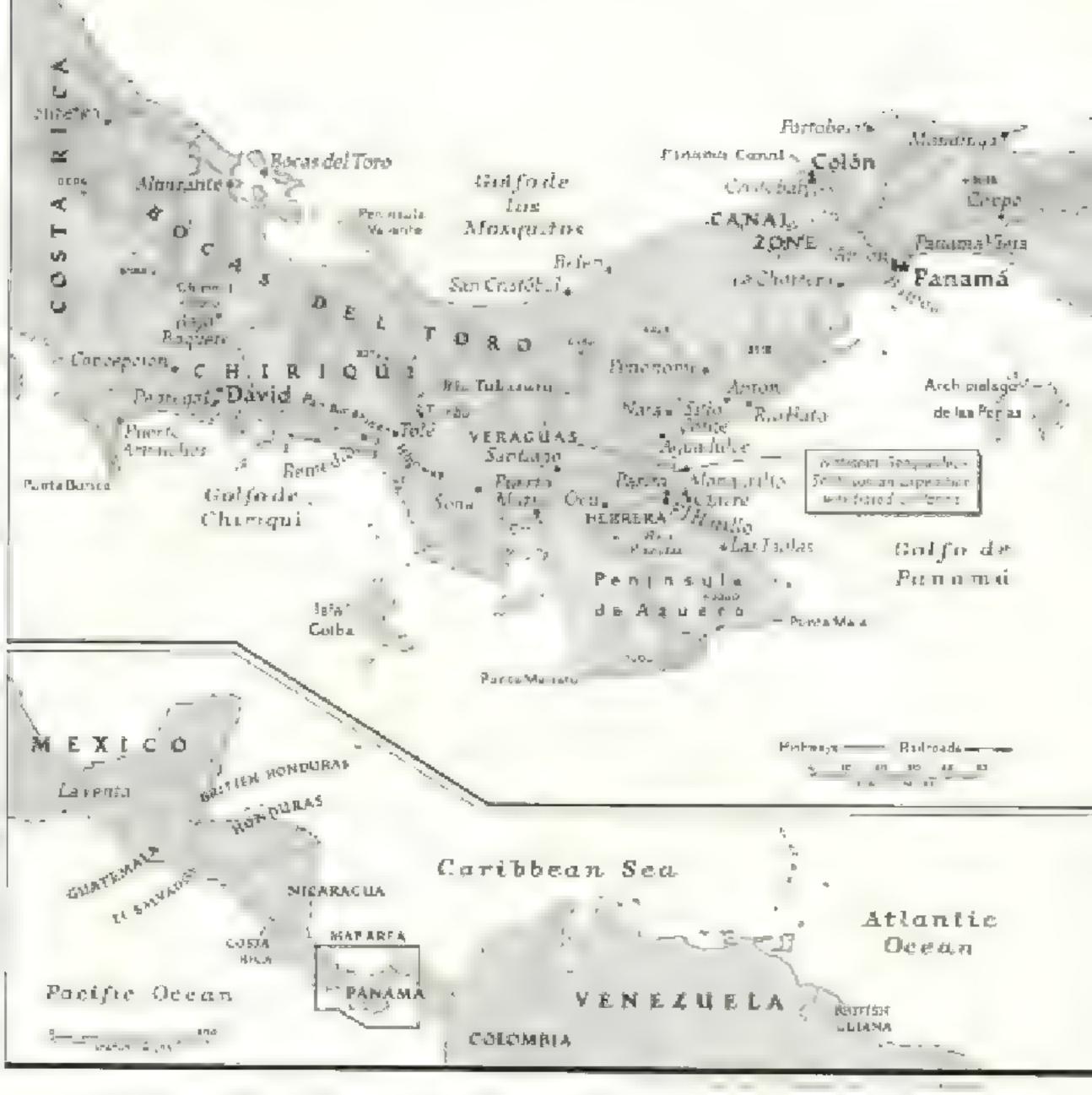
At the beginning of the 19th century, the Arvero Peninsula and the adjacent main and were mader the control of a powerful chief thinged Parity. The region to the west worden harded by another strong chief. This is these two rulers were probably of the Guayman.

both men hercely resisted the invasion of the Spaniards under Badrius and Espi - a and were never fally conquered. They could not, however, prevent the Spaniards from obtaining a both old at Natá and taking more than \$100,000 worth of gold

A few years later Espinosa led abother raid ofto he Azuero Ferdasula and found to his surprise that Parita had recently died.



Level's Butte and Republic Designs, & Logis Clears, Adorn Paning's America Panagy



Use Patroni's d'autocteas. Nome al chogendine Society-Son Useronia Arche deserve Uneurth Evidence of Rich Indian (Tixthgation

Next Prints, named or a powerful rbt I who miret the Aresta Penlisula before the Sirch or a fine Parima I with a goods proportant bank Marsa, Holy shill mornids, ment the root of Parity Javer, excited the claim will, safe yet foods, a lamana it is Parity the scale of the first and the lambat region to that the tonarm, and other it has by their is at a mountain born. Ord. Tele, and the lambat region to that the tonarm, and other it has by their is at a mountain born.

Breaking into the house where his body by in state, the Spanlards octained one of the ricaest hands of bot ever recovered. Among the clab state burial wrappings they found 355 pounds of gold ornance.

Lashed to the house posts by cords fied around their throats were 30 Indian captives was had been destined to be burned after with the great chieftain.

The burial rates of these Indians were unusually claborate. After the death of an important chief, funeral ceremonies lasted for two days. Learning this period has wives and household attendants were prepared for burial with him.

Wives and Servants Barled Alive

A deep pit was duz, with a lench along the si les at the botto in. During the two-flav ceremony, the wives of the chief—sometimes ten it it dizen—sal on the beach in the grave and were placed with chicka, a fermented corn drink, unto, they were thoroughly intoxicated

When the body of the chief had been placed in the grave, his servants and captives were put in with the wives, and the grave was i lied.



Note Managrilla a Stell Minard Marks the Scena of Stone Dioners Faten Lilli Nears Age of the Control of the Con

A Riels Arely or givet Six

Exidence of the forest and the productions

The book of the state of the pre
The book of the state of the state



When I oncert Fall in Potitue Business Books for He Water Vendor

Angell size as particular and conservation of a first the Manager and the Mana

Gold pend his were set with polished procious and set of to the Source formal at Situation a were no interfered him or a side of haldy imported from South American

Looting of Graves New Outlawed

Important one on tending the colline of the colline

The one of the program on the state of the s

Purpose of a pulsal and a second seco

land of a state of the based of the National Museum at the scients, a constant of the National Museum at the scients, a constant of the every effect to had him go a constant of the propertion with making a considerary of selection and the selection of the selec

ties, we decided to spend the season on the



Teaning Miss Punama Lanks at the World Outside

The district of the Markin Steller of the Service of Markin Steller of the Service of Markin Steller of the Service of the Marking of the Service of the Ser

to the viewer land. I have a like the sold town is near the latter entury which was a read to be a latter than the latter than

Arrel with letters from Dr. Mendez we be a considered to the masser. The execution of the offered full cooperation of the offered full cooperation of the offered full cooperation of the offered full cooperation.

Here, post of the expedition. Malion went into a high le with the mayor's mother. Boild to a With level circularities we soon found to be a to be a rock. Onat a roll of high-sor Arrest as general as a miles.

B' a walgt and electric lights were

to be and the house and in the formation of fatults to and in the land of the

In the test the part of a section of the section of

the tip the large of the task the large with kitchen and spectary.

When Dr. Alexanda to the total desirate and Warson Percepts joined to for total desirated and the total more between the large train and the total and sat the train and the war and the for the first war that the train and the group of skinning process fakinning process fakinning process.

the is a factor to the first arts with the land to the factor to the factor of the fac

the three lates in the and palm leaves on our said a language drawn equipped with a specific Hermitian for Dr. Wetmere's thought section language.

Dr. Wel we and Mr. Per spewader of in numerable till cach purming discrete angle at them an bell-spend are a reserved to the panel I did to the event more parable as a large and beauthous to the event more beauthous as a series of a thorough the strong to a wire war swept over the area all the area.

the exact yellows and talms were various have been collected. Matter exit and and particularly was go it of pretentious.

Our quarters were a life in the life of its and the life of th

Life in an Old Penemarkan Town

In only in plantation Parity to it.

to be a very above to it.

to be a fallantan in the land of the l

of 1 with the way of a control of white, pressent or blue, made from tail red class bound near to the fine to the There is a manual or the fine to the

On the fringe of two the houses are of the able at ariginal indicate type—oval throat two the control of the co

Movies are shown
who a week in an old
- but a term The films
realmost all of North
American origin, and

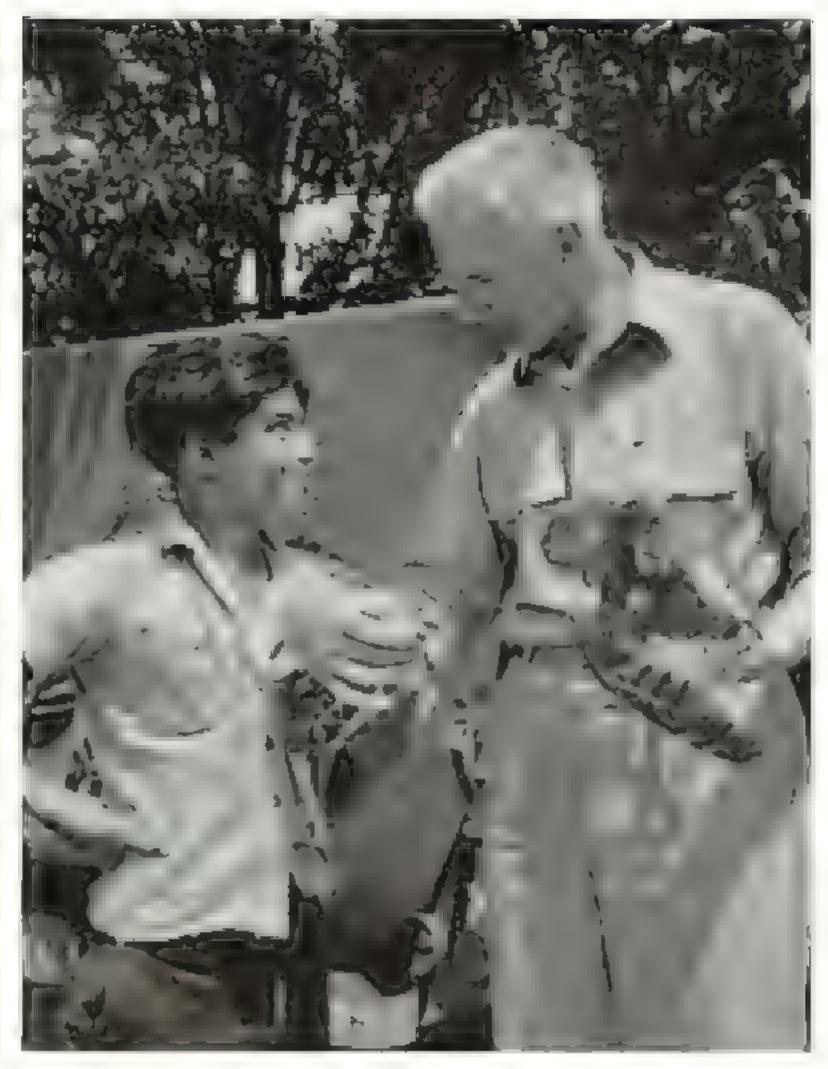
discouliizati.

fars dis-

I is manicipal electric plant functions from I p. m. to II p. m. the curiew hour. On he reliable to a built-nour, so that radies can bring in the rational lattery results. All activity steps it this time wis leader populace gathers around

nesterns are beavy

Virtually everyone who passesses 50 cents or more holds one or more shares of a lottery thice. These who have less than 50 cents a nerally pool. Then put mee with others or ally lives a large part of the second lives and the second lives and the second lives and the second lives are the second lives.



"Yes, Pedro, We'll Buy Your Owle"

We bo Not an Love of the common the Panta virtues of the contract times spread quickly among the Panta virtues and common to and common to the contract them for a few contracts aplete, and common to them there is valued vouth address a pair of the contract to the Alexander Weitner

On the day the resident for the recommendation that the town to the later than the recommendation that the second second

hunch,

the sixth reade. A nucse from Chitré visite the town three times a week to hald a chair

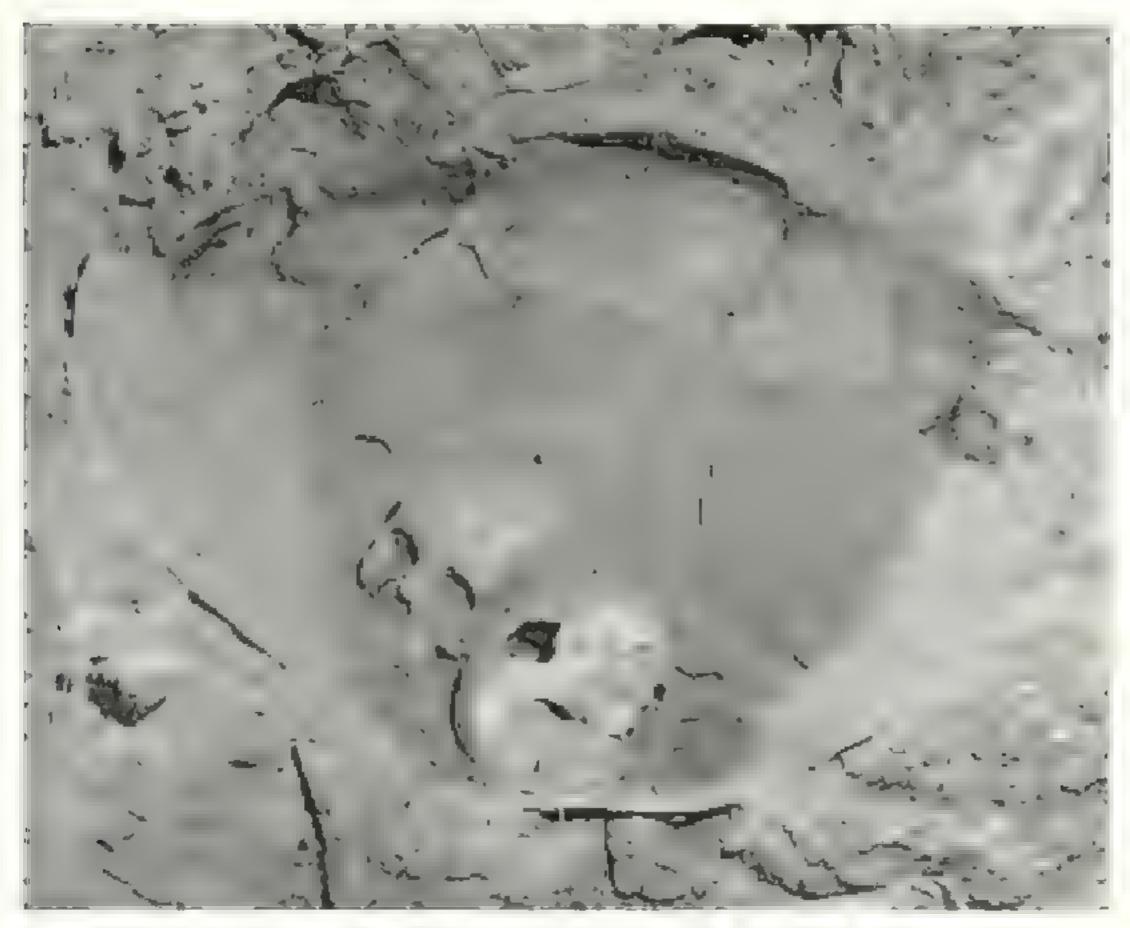
Water Hudes for a Rour by Owner

Swamps near by a e-sprayed with DDT in a trosquito control compaign, and outdoo tailets are similarly to at

Mull arrives and hoves twice a week. In the parties of the are a teleprish once and a plant of



Fact Stress of Carl Brings Science Closer to the Science of Abort and America tenders and the action of the action



Hur. Painted I and I read Deep in Bound Memods, Reveal Panamer's Anazont Famoral Chatoms

A low makes from Parlta the expedition uncovered the bit mound harial stir recorded in Parame. To trush he coments seemilies of the localist fact halian to be a seemilies of the localist fact of a literature between the factors and the localist factors and the localist factors are successful to the localist factors and the localist factors are successful to the localist factors and the localist factors are successful to the localist factors and the localist factors are successful to the localist factors and the localist factors are successful to the localist factors and the localist factors are successful to the localist factors and the localist factors are successful to the localist factors and the localist factors are successful to the localist factors and the localist factors are successful to the localist factors and the localist factors are successful to the

Well water was supposed to be ranning toom a tip at the street counce, but the water-works had be ken down at the time of our traval, most of the time our water was harled in drums by oxcart from the river at a cost at 50 cents a lartel (page 370).

Our workmen, incolentally, preferred the richet threat of the river water and never to discuss it they could help it.

visitors, we aid og Paramanian officials who came to see the archeological finds. Of a see did not know whether we were entert is ing one of the congressmen of the district or one of our own townspeople in til Onarina gave us a bingraphy after the visitor but left

Any Americans who aid not speak Spinish and who passed within 20 miles of Parka were at the be diverted to us on the assumpton that our place must be their objective.

Once when Maram was working on the never-ending Jab of cleaning presherds, a car counted by a dozen local boys drave into a patio. In it were a bewillered United States from obser and his wife

"I haven't the faintest idea why we are here," said the officer. "We came to Parita to see the old charch, but it seems as though the whole town insisted on bringing as here so here we are"

the situation was soon explained, and we and a prest passant sait.

Wanted: 31 Pregnant Women

On another eccasion we were dritted by a group of American doctors from Cotyan III outland, in American doctors from Cotyan III outland, in American, who were making a series of nutrition's neing in the his terlam world Panama On leaving us in the evening, they asked if we would kind y round up 25 or 30 pregnant

women and have them on hand the next meming so they could take blood samples.

We thought this seemed a little outside of our archeological program, but we solved the problem by passing it on to not friend the univer. He immediately sent messengers around with orders. The next morning, when the doctors returned, the 30 women were on

Onarina prepared our meals on the usual jugan, a large box partly filled with earth and containing several stones on which the cooking

utensils were placed.

ther food was not exoric. Beef was about dont, and hunters brought in venion on the everage of once a week. Best were control protecto, and para, where ment which fried as tender to oble ken

Its. Wetnete and Mr Perrygo mystified the townstock by never taking along shot leavy enough to kill a deer or conejo. Once in a write they did kill an iguana for their guide. We like iguana well enough when there is no other mout available, but don't consider it a delegacy.

Various boys in town trapped quail and a lift them to us for 10 cents each, so we often

had quail soup or broded quail.

White polatoes were expensive, I is of

we usually bud fried yams.

tillas. She made them about three-quarters of an inch thick and as heavy as a tire boot, so we were content with rulb.

thanges, mannes, pinear her, and parayas were plentiful and cheap. We had me and red beans twice a cay. What we didn't cut, furera, our handy gut, took home to ber three children.

We nie on oildoth. Mark n says she will never again live in a town without having a

tablecloth; it adas to prestige.

Marion glued together many of the fine pots that were found in the excavations. In a same box sie let the pieces dry in the proper position. Itoha Rosario, a neigh or, remarked that Marion coluit sew or weave—playing with pottery was her work! Sometimes pany was the word for it, when the pieces were warped and the pot did not come out even.

Carnival Opens with Water Throwing

We had been settled in Parita only a mouth

when camical time arrived.

Opering and Aurora bad four new dresses, one for each day of the carolival, big social event of the year (page 302). They must have gone to bed in their cirthes, for they always came to work in the numb-rumphed party dress.

The first day of the carnival was the weiters' day; children or growthips could throw water on anyone they could eateh. We stayed in our own paths most of the day, since we did not care to be baptized.

A toma is a group of scrematers. The tunn from the Calle Arriba, or "Upper Street," arrived first, its leader carrying a hope green banner. Next is late came three drawmers, a group of women singing, clapping their hands, and dancing, and some 50 or more followers—men, women, and children.

The leader presented the flag to Murion, and all the men in the group threw their bats at her feet. Twenty or more women formed a cure, and a couple started to dance. The women sang and took turns daming, while the men allemately denced and beat the drums.

Cow Dance "Brings Down the House"

hach of as had to take a turn dancing. They tell me I brought down the house what my version of the cosa, or cow, dance. All I was trying to da was to keep out of the way of my partner, who suddenly crouched over and started charging and bucking me with her head.

Parited is are supposed to excel in the putest form of Lamborita. The best dancers do not move the leady above the blps. The women circle about the men and keep time in a rhythmical, restrained fashion. The instrangental music, of African derivation, is produced by three drams, two of which are vertical and played with the hands; the other is horizontal and is beaten un both beads with sticks.

Deck and Marion permitted themselves to be decorated with straight pins bolding a tiny face of green tilbon. When they asked Charing what the decoration was for, she in issued them they were supposed to give a dollar to the denor on the following day. Unfortunately, neither of them had the slightest blea which of the 70 people had burneted them.

The second day of the carnival we had a visit from the turn of the Calle Alajo, or Lower Street," their because Leing a bright sed flag. On the last day both tamas came by for a final glorious long. Needless to say, no work was done chains the four days the carnival lasted.

The tiwn torber, who I ved across the street from us, filled the batter's tracitional rule as sentral news source. He rushed over at 7 one morning to tell us we should go to see a wedding party which had just left the church in a bit of breakfast, before starting its long trek homeward.



Gran Memory of Ponjula's Savade Days a Newstre of Haran Teach

M. Martin W. String as a first of North Contribution of the Con



Treather Stabled Across an Indian Village San Lad to Secrets of Paradar's Paradar's Paradar of the same of the property of the same of the



* Omuttologists Skinning Birds in Climp, Attract a Gallery of & harris

To the second with the second second

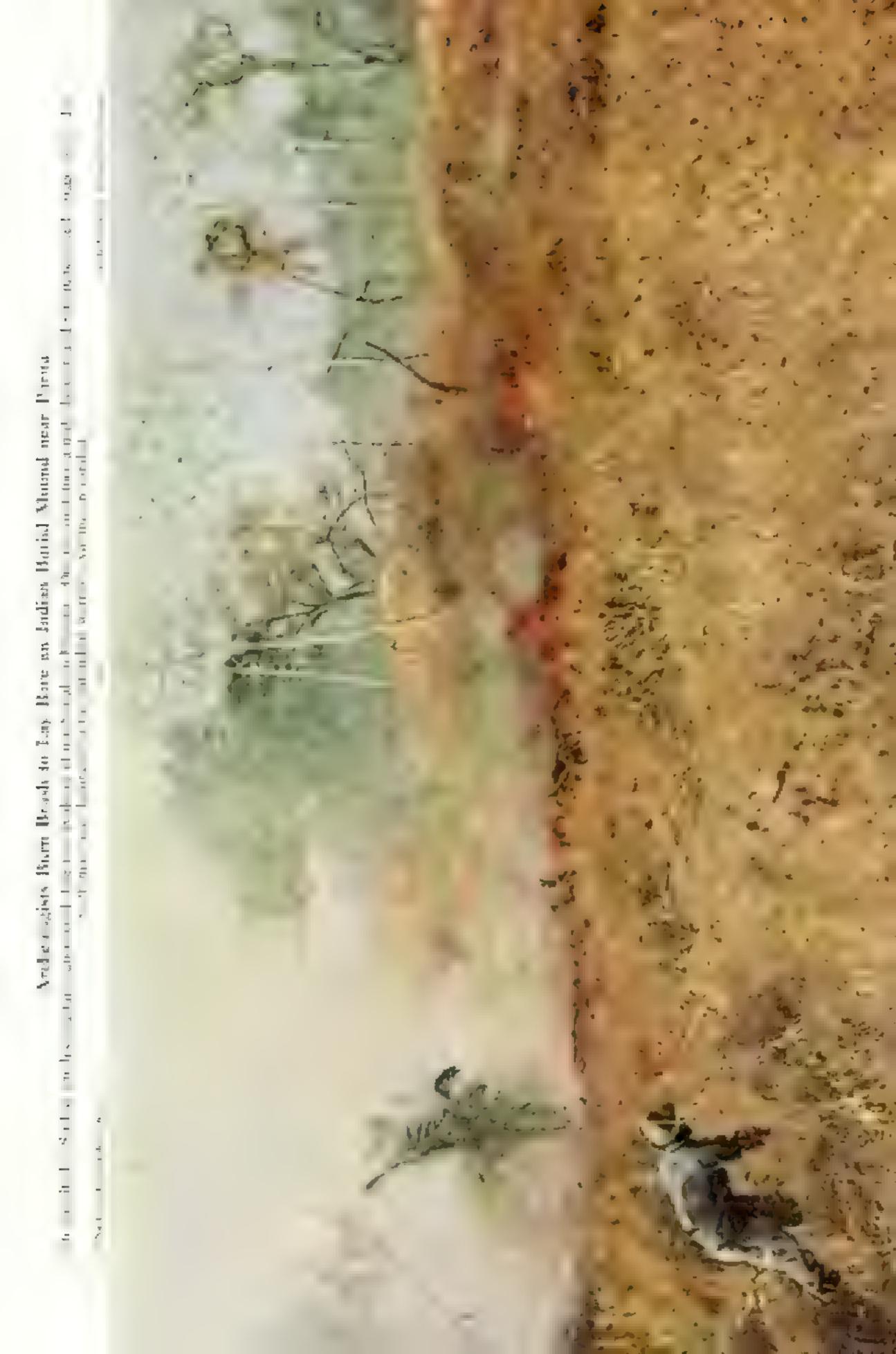
T Pana marriages West Real Campus Hais along Import cured Shirts

And the property of the proper





Swang





Acros Louises Like Wrestlets', Adobs Builders Work with Feet in Mad Issay, we creaters of the continued the constant Above essale, on a lapt all national productions as a last that we can depend to a lapt talling so



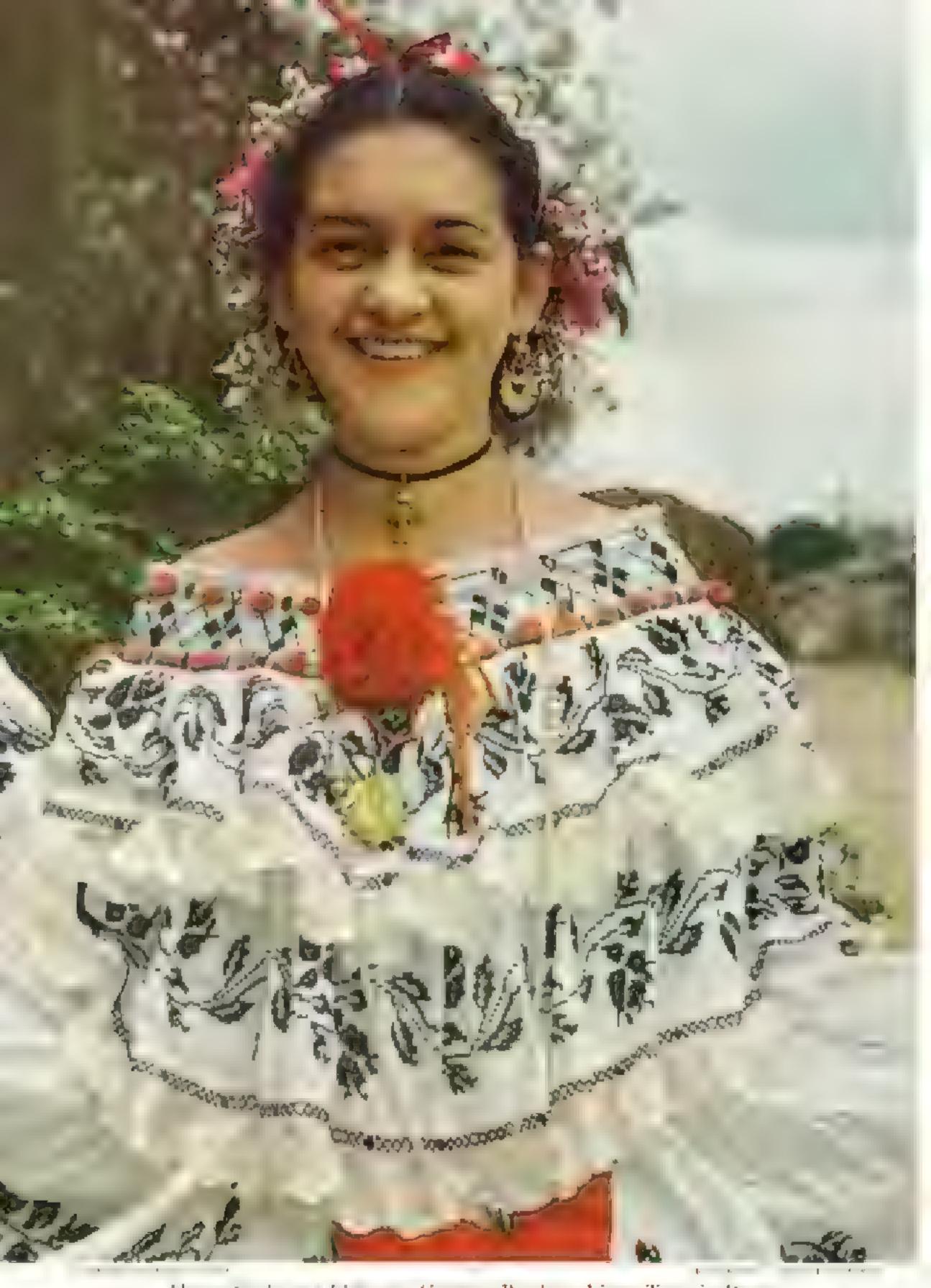
* Just Married! Berenh Her Sain Court for Thomas Wara's Could be Slayes.

Are column lerkation in the was a report of the first of the same and th I ted I tell process of the I that touch the

r Paragon Series Runge from Trans Lace Rother to June & . aguar Term

all the second the second the second The second of th property of the second second second -1 G -- 1-1 -- 1 -- -- -- -- 1 Industrial Land





Happy Sinds and Editorials Courses Problem Pies a Time in Parma

League a control of the survey of the problem of the Special Section of

Dick took pictures of the werlding party, and the grateful groom returned several days later to present him with a fine chicken.

The barber also informed us of our first junts, a get-together to build a house. All the men doubte their time, and the builder i unishes food and drink. Oxcarts bout water for making adobe.

The men come in spotless clothes, but are soon covered with pand as they mix the clay, straw, and water to the proper consistency with their feet (page 320). Crossing arms over each other's shoulders, they stump and sick, and finally their busy feet throw up a clod of adobe. This is caught on the fly by a wacker, who carries it to the house.

The framework of the dwelling has been prepared by the town carpenter or the owner Mad is slapped on from inside and outside. More, held together by the straw, is draped over horizontally placed cane or pole supports.

The men great a tuneless chapt, "Munh, buch, ugh," all the time they are working, and the women keep their spirits well fortified with liquid refreshments.

As usual we went on various side trips to take pictures of festas and to see the country. When we showed copies of the National Geographic Magazine containing pictures of our Mexican expeditions, one bright-eved little Indian at Orn asked if the people in Mexico were as carifora (I wable) as her people (page 3801.

"Yes," we talk her, "they too are country people, and are friendly and sincere."

A typical example of the haspitality of the people was our reception in Och. We had gone there to take pictures of the fiesta in honor of the towa's patron saint (page 587).

Mr. Curtis had told us to be sure to introduce ourselves to Leopoldo Castellera; so we went to his home, which turned out to be three houses. At but two of his 12 children were married, and so many had returned home with their children for the fiests that there were 40 people for ments. Nevertheless, he and his wife insisted that we join them for lunch and seemed disappointed because we would not stay for support

At Ocu we paid a dollar for a ringside seat under the stands to take pictures of the ball-

fight. In these country bullights the animal is never killed. Local brave of footherdy young men play the bull. There were often so many bullighters in the ring shaking bunkets that the poor bull didn't know which way to turn.

Once, at a butlight in Parity, one of our workmen came over to dedicate his built to Marion with much formality. All ceremony was quickly forgotten when a brave row instead of the expected bull entered the ring for Juan was forced to run for his life and thus fence

When we broke camp Marion presented Juan with her favorite bright-red Mexican wood blanket, which we hepe has brought him lack and has not attracted too many bulls his way.

Shoe-shaped Tomb Deep in Rock

Our archeological work meanwhile was provited extremely productive. During our three months at Parita we excavated four aboriginal sites.

The first of these was about two miles from town. A day's work with our crew of 25 men repaired the owner tread enough to enable us to reach the spot with our truck. This site, which we designated He-1 (Herrem Province No. 1), held a real surprise in store

Natives of Parita had led us to the place a tlat elevation high above the river, where the ground was strewn with broken pottery. Not being possessed of X-ray eyes, we decided to dig a long trench (page 386).

Since our main purpose was to determine the period and length of occupation of the site, we dog the trench in one-foot levels, labelling the material from each level separately according to standard archeological procedure. In this way it is possible to more changes in artifacts and pottery styles, the most recent nuterial being near the surface and the oldest at the bottom.

We found less than three feet of village relase on the surface. Underlying this was a solid but soft dislategrating granite base took.

More to test the nature of the underlying risk than for any other purpose, we continued the trench to a depth of eight feet. Then, surprisingly, the pick of one of the workness broke through the soft sterile rock into a large pocket of rich brown soil

This seemingly bupossible situation was some explained when we found we had becken into an earth-filler, tumb. Clearing it out, we saw that at had been constructed by digging a circular shaft, about two feet in diameter, through the base ruck to a cepth of eight feet.

At the base of the shaft a shoe-shaped charaher had been hollowed out. In this had been parted the bornes of two individuals, with offerings consisting of beautifully painted pottery vessels, a large three regged wedge (page 575), or grinding stone, several polished stone axes, and a co-per chisel,

Continuing to expand and deepen out trem h, we encountered many such tombs, alconstructed in the same manner. The largest of these reached a depth of 14 feet and con-

tained the Lodies of 32 persons.

Most of the pottery vessels and other objects we recovered from He-1 proved to be very similar in type to the pastery and actifacts found at the famous Sitio Conte, type site for the Coclé culture. The tembrat He-1, however, are of a quite deferent type

The site was probably occupied only a short time before the arrival of the Spanisrds at the beginning of the lath century. The pottery from this period is some of the most trianc and preasing that was ever produced by pre-Columbian Inclais.

When we felt we had completed a fair san pling of the-1, we moved to a similar site a mile distunt. This, we found by excava-

tion, belonged to the same period.

Earth Mo and Covers Numerous Toubs

Limitly, four or Live miles from Parity, we discovered a site with a very coherent appear ance. This site, He-4, was at the base of an isolated hill almost two miles from the present course of the river. If you sisted of a greap of 10 earth mounds arranged in the form of a crescent around a level court.

This was of great interest to us, since never by fore had mountly been rejearted from Pan. area. If was here that most of our excava-

tions were conducted (page 559).

The first mound into which we dag was a large flat-topped structure about eight feet in a la Tobar suprise, our treach dal pet reach base level at eight feet, but continued the bah a succession of clay floors to a depth of 22 feet. It was a most complicated stateture, and beneath the mound proper a minher of tombs had been excavated (page 382).

The postury here was of a different type from the typical Coale ware. In one large med bowl we bound the remains of a y lang. child with a neckline of hollow gotal leads and other fleads of greenstone. There were also several animal engies made from shell

The peut mound was entirely different. Near its center, and not more than two feet relow the surface, was a stadin of 40 painted note in the form of bird eligies and a number if long-necked bottles. Just below these were

s one exquisitely curved bytons in the ferm of styllzed alligators unde from manatee ribs.

Still lower, at the base of the mound, were many urn burials. The large globular urns ware coverns, by lids with crisscross handles and each copt (seed the bones of from one to four individuals (page 383).

Necklace of 800 Human Teeth

In one urn, containing the remains of a single adult male, we found a necklate made of approximately 800 perforated human teeth? Most of these were the front incisors. Milite them 200 individuals must have been required

to make up this neckbare (page 385).

STH another mound contained only offerings of ceremonial pottery vessels in astonishing quantities. Most of these vessels were ninunted on fall pedestal bases and were of two types. The type consisted of a painted globular bowl and the other of a bowl forming the eifigy of a brightly passted king volture with unispical wings.

Other vessel forms, such as frogs, alligators. whippoorwills, and more conventional shapes. such as platters and bowls, were also appre-

sented in lesser numbers (page 376).

The pattery from this amazing na und forms. the nucleus for a new type of abonginal ware which we have termed "the Hatello" ware, after the name of a near-by runch.

In another mount at this site we found again the practice of excavating bunds bereath and is the mound itself. Here the Layorite affering consisted of large quantities. s proclimes prove than 100, of almost alen wal red pumled globular jars with short necks.

In this mound, too, we found more of the carved manutee ribs; one burial with a half dozen gold dises the size of 50-cent pieces some burials with gold plated animal and bird effigies; and the most beautiful examples of solvehrome El Hatillo ware that we recovered.

my far the largest quantity of material excavated by the expedition came from the El-Hat dlo site, and because it represents a new of flure we are booking forward cagerly to further stady of it.

Oldest Panansunian Site Vet Known

The final site which we warked, while not so spectacular, was in many respects the most important of all. This was a shell mound near the mouth of the Parita River, not far from the town of Monagril o.

Here on a desolute salt flat is a pile of village refuse and shell about 200 yards long and 50 yards wide, marking the site of an ancient group who subsisted principally from the sea. When the site was occupied, what

is now a dry that most of the course, at himse hear war andeep now at the same appears so this include in this taken to be page 375 c.

O reservation we found that the collection of the proposed for a time and then I mg an and oned; hay a collect a the village of the collect period, and finally abandoned, probably more than a the asand years ago

the potters used by these unions inhabitants bears no resemblance whatever to that from the known maintand sites and is of a primitive type. It is impainted, and declared only simple breish as and parastate designs reministent of the earmost parts of the New World, such as Pern and Mexico. The Model of the reputation to the reputation to the reputation to the reputation.

Survivors of Looted Tribes Fear Whites

In the bick mountars of the out of the Azero Peninsulus live the Southern Gusani Indians I have been the present-day survivors of the search of the present-day survivors of the search of the Spaniards in the Irah certifies. Their justly acquired suspicion toward strangers has not yet disappeared.

This bestile attitude is not so much due to any deslike of a recess, as such, this to a ear that the stronger may be a test that the stronger may be a test test transport that the properties, that the stronger is white encreachment on Ganyind territory

To the present rice these In diams sometimes place noncealed set weapons—hows and an example them, into a string and discharge them.

The ethnology of these Inlines is imperfectly known, They are selden visited, and descriptions by car a (ravelers are brief and inadequate. Only



Dr. Watnore Studies a Masked Duck's Air Suc

With a blowpape the Smithsonler levilent in armi bologist antians the throat membranes of Oxygen and an analysis of the contract of the contra



"Who Needs Trys?" A Pet Pit on a Leash Makes a Portier of Dejection

I have the property of the pro

one modern ethnographer has studied them They live primarily by hunting and furning their principal crops at present being corn,

beans, mundoc, and banabas.

Most of the scattered Gasymi houses are built at a ridge or m variain top commanding a magnificent pararama, even though living co such a site entails the penalty of carrying water up a steep trail from the nearest stream far Lelow,

One Gary mi to whom I mentioned this disadvantage stated that the drawback was more imaginary than real, since the women carried

all the wider anyway l

This practice of bailding on mountain type is probably a survival from earlier and more warlike days, when a good lookout was essential and such a position was favorable for rlefense,

Each year, usually in March, when the clearing and planting have been completed, the Ganyani hold their principal ceremony, known by the Spanish name of balseria. We determined to see one if possible

Although our archeological camp near the coast was not a great distance from the Guaymi country, we could not find a single person who had writessed the ceremony.

The dubiculties are not confined to fear ting the remote k culity where the event is held. The location and date of the ceremony are thanged every year, and the lad ans try to keep this information from outsiders. The day decided upon is made known to the widespecial Guaymi groups by means of knots that in feeds adong the trails.

Tale, a mambain vlage, is the resect $oldsymbol{P}$ anamanian town to the Southern Gaaya iterratory. Our friend the mayor of Parata communicated with Tole for us, and finally learned at the last minute that a three-day period in late March had been definitely set

for a big buberia,

Accompanied by Mr. Max Arcsenena, fortarr Panamanian Minister of Education, and Dr. Abrjandro Membra, who were visiting us at the time, we left Parita in our truck and reached Tole over a tough road well after dark. Town officials received us with wonderful hospitality, had a fine meal prepared, and permitted us to spread our blankets in the schoolneuse, where we spent the night.

By Borsebuck into the Ganyani Country

With a guide, Pablo, who spoke the Guaymi language, we left on horseback the peat day for a locality known as Tambor, where the traberia was to be held (page 368).

Leaving Tale, we nale across a plateau and down a steep and narrow trad into a deep canyon. There we emissed a flishing, banklerstrewn river, then climbed an attochously steep and winding trad only another plateau.

In places this trail, worm by the hads of forces and males and the downpours of the tainy season, bad croded to a depth of 25 or 30 feet, although not more than three feet wide

So parrow were some of these slots that we had to readjust our packs to enable our horses to pass through.

After five hours of up and down fiding, we came to the edge of a plateau and addressly

our chiective lay before us.

In the lastom of a bowl in the mauntains, several hundred feet below us, was a partiv cleaned area within a bend of the Tabasara River.

There the balseria was in full swing. Before starting the steep descent we put at for 10 minutes to drink in this simil's eye view of the wild scare beneath us.

Like Times Square at New Year's

At this distance the most impressive and supprising feature was the sound. Indemningled with the incessant shouting of some 2,000 led any were mechanical unises that someted to us like the bluing of hundreds of nutomobile ht rus and discreptant musical insumments

The sun was just setting and as this increatable mentey of sound rose to us on the evering air, Marion said, "Why it's just like Times Square at midnight on New Year s htel" And so it was.

By the time our burses had scrambled to

the level of the giver, it was dusk,

Defore reaching the scene we still had to cross the forcental Tabasará. Our guide selected a wole spot alasse a mishing whitewater rapid, and through the swift current our burses slowly groped their way, more than telly acep, amid the big houlders which formed the stream bed. Zigaigging back and forth, we finally reached the other side.

As we rude up a steep slope to the clearing the wild scene of the balseria met our eyes at close range. The 2,000 participants were so also that in their activities that they paid fille attention to us,

After Pablo had tled our horses in a patch of woods, he introduced us to the chief of the host tribe. A handsome broad-shouldered man, he greeted us with considerable dignity,

even though slightly drunk.

Leading us across the cleaning through the midding contrestants, the chief into eluced us in each of his three principal waves. Each had her own lit le stou gade, and with each we were obliged to arbik a large gourd full of chicha.



Wall Franted Prec and Formed Teath, He's Ready for an Institut Festival

Here we are a series of the property of the pr

The Indian en arenly well surplied Indian tell, which is a his and

talete. A row lost on the the week be pretty to be to be a large when the mast be pretty

the tax can are, be in replied by the work is falls.

The real least is the parameter who is a limit of the first section of the first section of the first section of the first section is a limit of the first section of the first s

prover seriety mode the large transble seriety the reseriety back-

With the water to the service of the

Simulate private single single

The second period of the second of the secon

The worth was a draw More More with discrete with discrete was from a language to the control of the control of

introduce to the interest of the

in former three these describes were worn as a circlet around the head. Now they are as a leaf to the bands of hats wowen by the train that patterned after those worn by the people of the east space of a

Men Wear Staded Animal Sains

A real the mentage he state skins of annals on their lasts. I we have with the lad downward, want the age of the second of process the architector. Most a month configuration of the states of the states are the process of the states of the states are the process of the states of the states are the states of the states

attached to the tip of the tail, and this rang as the weater looped about in the antics of the balseria. Many men were have some broad cohers fashioned from bright-colored glass beads.

The men's like dingarees were applied of down the sides of the legs with colored genmetric designs. Pable pointed out that many new dungarees had hig square patches sewed over the knees. This, he explained, was in imitation of similar patches seen on the clothes of paor Pannon minns of the coast.

Most of the men had their teeth decorated by chipping. Two styles were in vogue, sometimes the front teeth were all chipped from the sides so that they came to a state point. Others had two drep notches in each tooth, producing a sertated effect with three points on each tooth. This custom was evidently introduced long ago by Negrues from Mrica.

The Indians who live on the side of the muon ain where the ceremony is held act as hosts to the group which comes from the opposite side. The host group furnishes the necessary food, and unimmed quantities of the contract.

Each family attending the balseria builds fires, around which its members rat and aleep, If there are small children or ballies in the family, a small stockade is made of cut branches to keep night prowhers from stepping on the sleeping women and children.

Poles Hurled at Opponents' Shins

The ceremony consists of a series of contests, including innumerable list fights, and the balsa it cowing game from which the acretrony derives its name. The contestants represent one of two groups, the hosts or the visitors

The first day is spent in purely social activities, as the Indians gather and set up their little camps. The ceremony itself starts at sourise next day.

In the clearing a rack is elected and on this are nearly piled 50 or more poles of light balsa wood, six or seven feet long and about four inches in dameter. After appropriate speeches, the poles are distributed and the near divide themselves into opposing teams of three or four men to a side.

From a distance of 10 or 12 feet the leader of one group then throws the pole, end first, as here as he can at the shins of one of the members of the other proup. The defending team retrieves the pole and it is their turn to be the algorisor.

This continues for 24 hours, as many as 20 or 25 teams contesting simultaneously in the midst of a midling crowd of spectators who must be alert to dodge the flying poles.

Mast of the speciators, who kept incessantly in moth it, carried facise-making devices. Trumpets made from large marine couch shells or from the horns of longhorned cattle produced the effects that from a distance had sounded to us like auto horns. Some orlestrants had whistles, flutes, or ocurious made from pottery, wax, or hollow reads. Still others had buttle-shell rattles, wooden rasps or metal bells. To the disc trus produced was added the incessant shouting or chapting of all.

Wives at Stake in Bloody Frahts

The first fights, we learned, were usually fought for one another's wives. One man would challenge another of the opposite group and, stripping to the watst, the pair would begin the fight without ceremony, although a crowd would soon collect and form a ring around them. The wives who were the stakes usually abandoned womanly reserve and wouldy abandoned womanly reserve and

Vicious affairs, the tights continue until one man is beaten belpless. Sportsmanlike rules appear to be observed, only the fists being used for striking. Hair pulling is permitted and the contestants continue fighting on the ground when knocked or pulled off their feet

beveral times we saw a challenge refused when the challenger, made optimistic by chicha, was obviously too drank to fight effectively.

but tracting we had brought some lipsticks fish books, dress material, and pocket mirrors, but digarettes seemed the only commodity the fudians really wanter.

In this connection I learned an early lesson. As a treat for myself I had brought a few of my favorate cigars. A timayout to whom we had just presented a cigarette asked me for a light. I handed him my freshly lighted cigar. The Graymi promptly pocketed the cigarette, stack the cigar in his mouth, and went happily on his way.

By early afternoon the effects of the chicks were well advanced. Groups of women gathered here and there in lines, holding hands swaying on their feet, and wearing the most serious expressions as they went through a measured dame. The friendliness of the men by this time was growing a bit oppressive to us, since we were outrumbered several hundred to one and all accurate bent on showing their regard.

Rounding up our borses, we left the wild scene and took the long but quiet trail back to Tole.



In a Baltimere Plant, Spices Land Their Admatic Places to Big Pusiness

1 to prove McCormick and Company, Inc. very the find which there we are the first thing. In the first the construction of the first things the construction of the first things the first things

Spices, the Essence of Geography

BY STUART E. JONES

TIGHT in weight but heavy with history these are the spices.

To appare them today is prasaic. The housewife troudles her wheeled basket through the afsies of her invertee market and selects a par kage of peopler from India, singer from Jampico, or cloves from Zana har as casually as she would a bag of thur from Minneapolis.

A few centuries ago, these (ragrant, palate-Fingling seeds, buds, leaves, reots, berries, not bits of bark bired were into perilous adventures and beloed to build empires. Nations and cities blussmand under their influence Churches and palaces were built, the arts thurished, blook, was shed in temote parts of the earth—largely because of spices,

Columnus sought spices, among other things, but descovered the Western Hemisphere instead. After him came Vasen da-Gama and a long line of Portuguese, Dutch. and English adventurers whose quests for these precious auxiliary foods opened up the whole would for exploration and trade.

Spices a Spur in Preparation

harly search for quices was gold because in the days before refrigeration they helped neserve food. Also, they were used to make A the circles of the circles and orning long before bathta as came line. W MLE.

Our word "space" or not from the French ephe, which in turn stems from the Latin species, meaning 'sort' or 'kind '. The fact that the brench proper suil calls his shop an epicerie is not surprising, in view of Gallic reverence for good foods and the part spaces.

play in Birlr preparation.

The word "graces," from this be trained to the space trade. One of the earliest of the . ity gullds in medieval England was the Pepperers, first heard of in 1180. In 1545 this grial was succeeded by a group which later became the General Company. The term grover' was used to distinguish these menwho beautit and sold in 'grass' (large) quanbelies, from those engaged in retail trade.

Over the years since the early voyages of exp. ration the flow of spaces from land of origin to market place increased, so that today, in normal times, they are cheap and plentiful.

Virtually every country contributes some spices, more than half of America's suppries normally come from the East Judies. the Maday Peninsula China, French Ladochura, and Japan. These countries forcasti such staples as pepper, cassia or chuarnon, ni tmeg, mace, and tarmeric.

From Europe and Africa come about 25 percent, including caraway, coriander, cumin, puppy seed, ginger, laurel leaves, sage, and thyme. Other sources are the British West Indies, where nutmeg, mace, ginger, and allspice are grown, and India, which now sends us most of our pepper.

Views of an Expert "Spice Taster"

Very early in my space assignment I became confused by the overlapping and complicated terminology of the spice trade. Exactly what are spaces? How it they deller from herbs."

I took these questions to Crosby Gaige, of New York City, who serves as adviser on flavor to the American Spice Trade Association.

" "Seasoning" is a comprehensive term upplied to any ingredient that enhances the flayer of food," Mr. Galac explained, "In my optiment, the word 'space' or 'spices' should be limited to aromatic substances, mainly of implest vigetable origin, that make doubd slees enquent

I would list as spices proper: allepire cassla, cassio buds, cinnamon, clove, ginger mase, autoeg, pepper, and perhaps turmeric As a subdivision, we may name here derivatives of the Capsicion family, the red popper They want a believe public ters of pure incoand chilf pepper" (page 40a).

In addition to these true spices, Mr. Gaige continued, there is the entergury of aromatic seeds. These he isted as anise, cardamom caraway, celery, curdin, coriander, diff. fennel,

feetigreek, mustand, and poppy

"k order my classification," Mr. Galgepointed out, "mustard is an atomatic seed, whereas in the spice trade it is generally

culled a spice

"And in a bracket by themselves I would pat the various theorems salts sonion, garlaters, are every mades, events be arreseasoning sait," which is an all-purpose mixtute of ground spices, herbs, salt, and hydro-

lyzed proteins."

Mr. Grige then turned to the enormous number of culinery herbs. He grows many in the garden's Chis Westchester County home. Among those is common use are buy leaves basil, chervil, celery leaves, fennel leaves hater-tadisti, oregano, parsley, the mints, marjoram, rosemary, sage, summer savory, whiler savory, saffron, sassafras (the deled leaves are called file in Creale cooking), thyme, and tus ragon.



Sage Comes from the Diffustion Coast-Sometimes with Thouseships are land Page?

to the second of the Line of the Company, Hollog the kenductor the received from mountain on the control of the control total process and control of the con

A fourth class of flavoring agents may be obsidered as condiments. 'Condiment,' from the factor conduct, to pickle, is a term applied lonsely to any kind of seasoning. It would avoid confesson if it became restricted to certain mixtures such as the street in its state, curry powder, child powd. Autor prepared mustards, tabasco of the horse-radish, and such saute as the street, it is horse-radish, and such saute as the street.

Wars Affect World's Spice Shakers

Mr. Gaige paysed for breath.

The all still another member of the vere table and mithat is used both as a flavor of and that is the on on table. This includes chives shallots, and quitie. This family is essented as a selection.

Political and economic upbeavals in the growing areas throw the spice industry off balance. World War II had almost entactropian effects. Even today importers and grinders have not fully repowered

A most three-quarters of our tonnage came from quemy-occupied countries or war gon to tanately, big stockpiles of spices were on and. These jockpiles of spices were on the Charles in the goards for nine months, and a year's supply of other important spices. Just before the condict the spice market his a low. Stocks were accommisted in expectation of a price rise, as well as in anticipation of war.

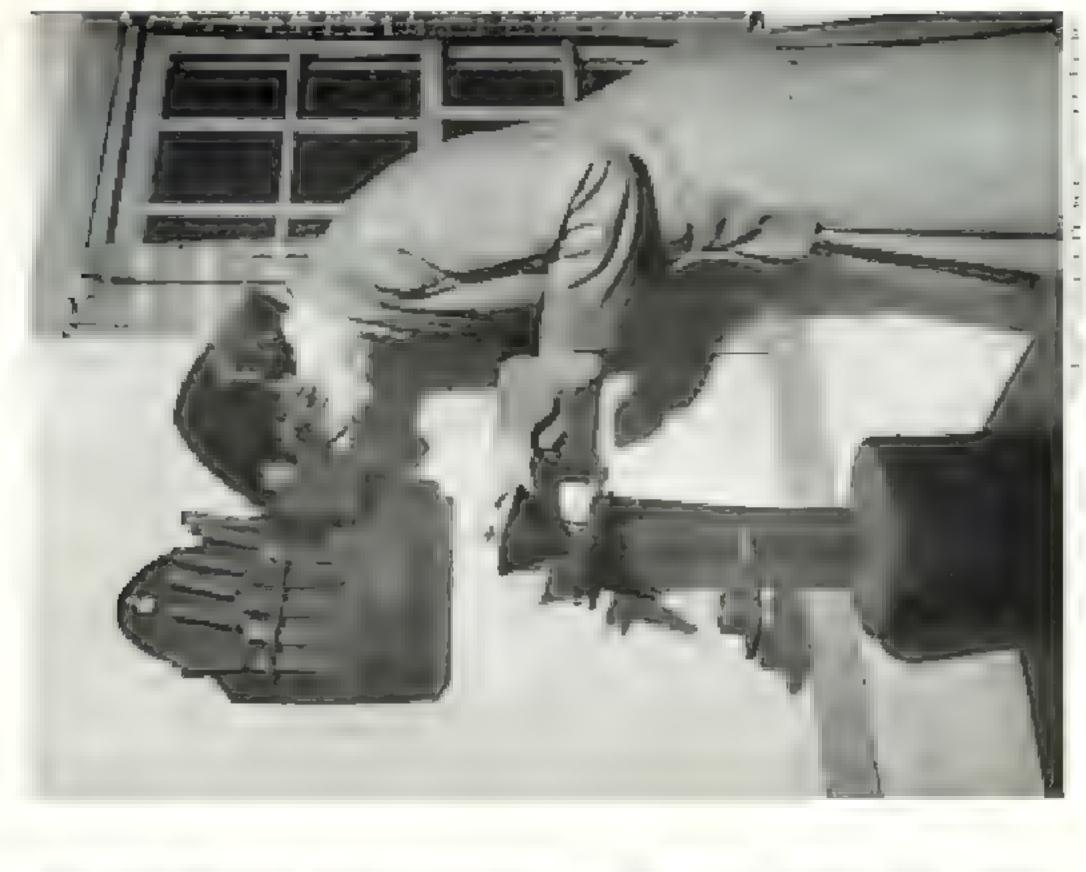
Vil through the war many people were unsware of a five scarcity. Of peopler, for in the the average family taces only 7.1 ounts, per



Land in Spice Brokers Hagds Ar gaby Over a brazeant Bouquet from Tropoc Lands



White Pepper Is a Success of Buncko Island, in Worldon Indonesia



Spire Gerneling Was a In Charge Washingtons I

Cretument Greek Official Pandency to be de,



長

year. Getting along with a fraction of that was a minor wartime annoyance.

there was little need for such spices as cimumon, cloves, nutmen, and all-pice, since most recipes requiring them also demanded

even scarcer sugar and shortening.

Hardest hit when the Japanese overtan the Far Eastern spice-growing areas were the meat packing, baking, and canning industries. Must substitutes fell short of pleasure gour news.

Synthetic Pepper a Result of War

Normal American critis inplies of pepper ranges from 30,000,000 to 40,000,000 points per year. As soon as the shortage became constent, the Covernment froze ad stocks and ultimately cut consumption to 25 percent of that amount.

Hersewives became (unitar, for wattime, with synthetic pepper. This was muce from a cereal base with a number of other intredents, sometimes including a dust of genuine repper. The impartion larked the flavor of the pepper and sold for three or four times as much as the real East Indian spice. Also, it was unfactors at to attack by fuseets, while real pepper is not.

Inother source which made up it small part of our pepper defielt was the Mambar Coast of India. Though the Indians themselves consume yast quantities of pepper, the Malahat top usually is so large that the rest of the

world gets some (page 414),

Time must pass before pepper production comes back to normal. In areas occupied by the Japanese, vines were left uncultivated and vanished into tangled jungle undergrowth. Large pepper acreages were placed up by the Japanese to raise other crops.

Black and White from Some Berry

Salvaging the vines and re-establishing the proper industry is a slow, painstaking process. Wild papper wines when led unattended, army to some 20 feet; cultivated ones are cut to about half that height, with better yields, herries turn from green to red. After they are dried by sup or fire, they become black, wrinkled peppercoras, like BH shot. Then they are ready for export and grinding.

Most pepper used in this country is that White proper comes from the same berry, but has its outer shelt removed before principg. White pepper, slightly less pungent than I lack, is used in mayormake and other propers that they where dark specks are undescribe (page

-()J),

Red propper is not a relative of black, or Piper negroom, but is produced by grinding

This should once and to get the country and South America, and now grows in virtually all whomer clusies. The small, very serial paparers known as chilles are used whole for picking purposes or are ground to make cayenne pepper.

The nast fiery types of red propers grow in British Africa and are known as Mornbusa. Sierra Leane, or Zanzibar chilies. Most varieties used by the American space trade are produced in Louisiana, South Carolina, Messissippi, California, Texas, Wash agron, Florida, and Mexico. A super-hot variety of blatter the tongue if used too for the endiance, from which the famous sauce.

A popular product of red pepper is parlinuar family. For some varieties, stems steds, and inside veins are removed; for others the whole pods are ground. The best typetome from Hangary and Spain; other producers are Portugal. Bulgaria. Yugoslavia Chile and Algeria. Domestic production is necessing, notably in Washington, Louisiana. South Carolina, and Thrida

Hesides adding an appealing red color to foods, pairckn impurts a mild, pleasing flavor. Prof. Albert von Szent-Gyorgyt, of the University of Szeged, Hungary, wan the 1937 Nobel prize in medicine for discovering that

paprika was rich in vitamin C.

Paprika Turns Camerica Red

Fed to canary Lards, paprika turns theorehanage red. It improves the coloration of latchery-reared trout. Paprika is also called "piniento"—not to be confused with "pinmento," another mane for adspice (page 420).

One large spice firm, R. T. French Company, of Rochester, New York, is a large supplier of birdseed. Canary fanciers who the of the standard yellow are targed by limit to be a talk applied to have did. Soon they may be supplied to have

red pets!

Spices are again available, though importers worry about the effects of untest in Indonesia. Daily having orders dashed by table or radio from American importers to their agents in trading centers set in mutuan a complex, for flung system linking every me's chaper table with men and wo near toiling in fields and jungles thousands of tables away.

My exploration of the spice industry began in Baltimore. Hard by the Patopsco River stants the square, many-windowed concrete home of McCorndck and Company, the world a largest spice and extract house (page 401). The building's eastern windows look across the cebbled expanse of Light Street and down



In Ward to the con She Gues Corth All Wrapped Up in Spices

Here in the state of the property of the second section of the secti

op into the collection of the last of the

All marks flat - the gir with an area of the first that the first

sold Assert deles appropries quite a que virtue sus a Calenda la contra suspine quita de la contra suspine quita de la contra suspine quita de la contra suspine de la contra sus

faller I saler Thanked Black

Value to the plant plant and part in the country that the country the country to the country to



The Armine of Vanilla Grown on Tabiti Is More Valuable than its Flavor

Windows to the state of the sta



To Give the Bull Park "Hot Die" Its Appetizing Bite, Meat Packers Use Spees by the Ton-

Pretty girls in Elizabethan grants make to stranger comfortable in the Olde Me toronae ten Henry, where, suppose that arises of spices, be awaits his name of a

The form of the photograph of

In approval to the Colorators 1, 19 to a grant of the the the conversators and the conversators of the first state of the first state of the conversators are obtained as a first state of the conversators and the play person of is presented.

And her will walk like the lik

The Lest comes from the Dalmiting or a and the growers there well it by weight. The area to be to be to be the control of tren buts a bag of the area of the control of the

Precious Oils Must Be Saved

In the confidence of a such type of page is the montant of a color wateraction operation astrocated in the same the
last a page as access to the last a color
as a referred to the color of the last
the many particles by which the same delice.

The state of the state of the least of the state of the s

Some single of the outside something



Serife in Leraway Lands Alberts Tading in New York's Papper Farance Markey

Lay of the state of the extremal square of the feet of

but one or end of preduce equation and the bing force of the state of the bing force of the state of the stat

the second of th

A Final Loca Kis Bacteria

the contract before the term of the contract o

The Maintaink property on the ground in the state of the property of the prope

to have the fill become also as the first of the property of t

[a bost part by a war part of algorithms, while the bence the sectod mark of the carees of the print was grown, to produce the care of a care of the print was grown to produce the care of the print of a care of the print of the care o

In 1937 two of Henry Skule's sons, David and Levi, conceived the idea of grinding spices in the mill. Until then spices had been sok to the Lausewise whole, and each kitchen had its own hand grinder (page 404). Peppercutos were ground on the table in casters with a little crank on the typ-a practice followed by many persons even today,

A New Industry In Horn

Liavid and Levi Stade ground up half a bazzel of cinnamon, slung it between two poles. and to diged off merces the marshes to Boston. There they sold their changeon to beat growers, and a new industry—plee grind ag was hom.

Thus also was born the D. & L. Smile Company, whose trademark adorns containers of every smown spice, condiment, and extract bought today by thousands of New England housewives. David Slade's grandsons carry on the business (page 497).

No longer, however does the "spice mill on the marsh ' depend upon the rise and fall of M Il Creek's tides. Some of the old water powered machinery is still there, but leside It stands electrically driven equipment

The charter granting the Stade mill exclusave rights to Mill Creek power provided —and still does—that the mill must at all tones be ready to grand grain for any citizen. of Chrises, precided only that the grain was raised in Chelseit.

Carefully preserved is one ad granding wheel, a round stone that weight 1,800 pour is. No one knows just how old it is "It has always been there," says Norman S Itili asham, the blade grandson who beats

Another Boston firm, the Stickney & Poor Spice Company, is the oldest importing concern (page 415)

Most spice concerns have important side live such as flowering extracts, which are es in alcohol of the armeatic parts of various plants; continuents; and insecticiles.

In Dijou France, the firm of Grey-Poupon has been in beisiness since 1777, and for many of those years it sold only mustard. Now there are other products, and luggeth (actories) . A. 1-a lie and Paris. Grey-Pot port mustard is sold in small urn-shaped crocks. The recipeis secret, but the makers admit that white wine is an important mered or

Diggest consumer of spices is the meatpacking industry. Spice distribution give special attention to seasoning missumes for such products as sausage and bunch meats, often using formulas supposed by the packers themselves. In Chicago are firms specializing in

such service. They also supply special mixtures to canning and baking concerns.

Spice in porters and brokers make up a light little community in a tangle of narrow. betting streets near the East River docks. in lower Manhattan,

To see a veteran dealer, I climbed to the second floor of a dingy building in Frant Street. There, snortly before his death, I tound Christopher Chicke behand a venerable relitop desk. He might have stepped from the pages of Dickers. High starched collar, clastic sleeve garters, and a benign, courtly mauner suggested a bygone day when Mr. Clarke might have been perfectly at home in London's Mincing Lane, once the world's spice capital and still an important center.

From his sample room, lined with looses and bins containing every known spice, issued a bearly stent which permeated the entire building. This atoms blended with others waited from neighboring coffee-emisting

houses and Fulton Fish Market,

Cinnamon and Cassia

Ustracing one latto the sample room. Mr. Ularke rearised into a box and drew forth a aght brown stick of bank, corled lengthwise, He broke off a piece.

"Taste this," he said. He popped a piece

into his own month

"It tastes like cianamen." I said

"That's what it is," Mr. Clarke will. "True clanation, from Ceylon" (page 403).

the reached into a secund box and snapped a seet of the with property blen. tical with the first. "Now taste this," he said.

"No difference," I reported, "It's still

a granted from the

'Y ta've wrong," Mr. Clarke said, trums phontly. 'The second one is cassia, from China and the East Indies. Takes an expert

like myself to tell them apart."

Mr. Clarke explained that in normal times American palaces sublima knew true cinnamon. it used to be a gourmet's concert to element the Ceylonese brand, but most exports in this hemisphere went to Mexico for use in incense burners or for flavoring chocolate. Wartime slutting of trade routes kept cassia off the market, but some true chammon trickled through. Both kinds are available new.

Much colorful line surrounds cinnamen and cass'a Both are the dried bark of evergreen trees of the laurel family. C meaning is native to the Alalahar Crast of India and Ceylon and is cultivated maitly on the latter Island

I've more full-hodied and aromatic cassia also known as Chinese chanamon, is used commonly in cooking. Saigon cassin, from



French Sales Diesson, a Almest as Sumstone is Frenchmen, All Require Spices

The state of the s

I reads from him, is quoted most often for the operators per a first Other grades are from the first transfer to but the masses.

to the part of the principle of the plant of the plant of the part of the part

The late of the transport of the property of t

Find a 1 le realization les interes manted into

eddened at whomebes of the tree of the tree

The constraint of the first ballowing of the constraint of the con

Medicines, Perfumes, Cintments

Prince do night reases, cheminum found and the more than when the parties of was the late of the small for a strong for the same and some appropriate that the same and some appropriate that the same and same appropriate that the same and same appropriate that the same appropriate the same appropriate that the same appropriate that the same appropriate the same appropriate that the same appropriate that the same appropriate the same appropriate that the same appropriate that the same appropriate the same approp

the offer some consequences was believed to be as an appropriate is names and an The Arabuan Night



Purple Saffron Blussoms from Kashurr Yield Yellow Dye and World's Coslicat Spice

Three soffers bear Part put the mind have force 77 of 1 to the content of the content of the content detailed between the 25 cert for the content of the con

In the same work Shelhad the Sailor will of voyaging from Basta to a unider thed Island where "I took in a great store of pepper and cloves and chance in exchange for countits." These spices he said at a hand some probt in Baghend.

trisia is mentioned in early Chinese her is, and a spite supposed to be cassia was imported into figure as tariy as the 17th century B. C.

A Liquid with Two Purposes

In Chapter 30 of Explus sweet characters and test to be a larger than the larger test to the larger than the larger than the larger than the Book of Proverbs, Chapter 7, we learn that a perfusic was composed of characters, ables, and north.

Chinamion and other spaces were constitu-

in the I -c., or many of the Cormelite monks in 1011. I sed internally as a cordial and or mally as a toilet water, it achieved wide popularity

Along with alwest, guile, camples of the other arematics, cimmum entered into the composition of a potent brew in which is not in vinegar of the four thieves." I want or obtained from who used it to ward off infection while looting the homes of the dead and Is ing duting an 18th-century outbreak of the plague in a French city

I plure and cause to health the fing that we write part had to rette a or the second of their prophylactic.

In spite of the deep decide the ancients between cassia seed of the particular that the report of your a Chance product and hence a form of cases.



On litt Long Journey from Vine to Shaker, Pepper Goes Throath Mark I learner Processes.

The second of the Mark Common Common and the second of the second o



to the first of th

With a "Thief" He Draws a Sample of Montana Mustard for Laboratory Test

Moral corking to the core of the Moral of the Market of at the prepared table contract when the prepared table contract.

Today, the word "chammon" is accepted to series full spin or but it is a confectioners, differentiate between variety. The fine provider used is cookery only contact the back of hot pares.

The cinnature tree is ready to give up its back when a zett six years old. Branches are tell itself of the go und, then taken to a shelter where the back is removed in long sections. As these cay, they carl and form the familiar character sticks or quills. The printed strongs send up new shoots which are ready for cutting again within a year.

Waste Pieces Are Useful

I meamon quit, graded according to size, coor, quality, at this kness of bark, reach world markets tied together in bundles, Grinders break them into small pieces before feeding them into their pulverizing machines.

Also imported are bugs of cinnatum chinthe term of the complete in tech, as a curso of the complete are performes, is extracted by dotabling

Venetian and Genoese sailars, I meet in the spice trule, met comvans from the Orient and sold their ranges at evorbitant prices Wealth accumulated from spices and salbelied build many of Venice's architectural glotnes in the Middle Ver-

therapse of the miraculous improvement trey made in foods, spaces came to be succeed as a precessity. The rich would pay my price: the poor Loarded the few small or this they could buy. No woncer the trade was profitable

Various menticipal properties, besites were rightly or wrongly assigned to spices. Cloves a richer, but neg, cinnamon—these and there were believed capable of caring a long to it ills truging from leprose to inscendia.



a Creation P. Later P. J.

With a Power San Ly Cars Closese Cases Bark in a Some League for Cirindian

the this up to 1 to 3.2 and 1 to 3.5 and 3.5 and

turned form the Orient with tales of scring and people and canamon (case a) on the Midman Coast of India.

Marco Pale's Tules Spar Exploration

Navience and merchants who tend Police account began to think that it anyone could not a facilities encountered by Polo, be might make a fortune by sailing off to endia for a load of spice.

Corner with Marco Pole travels us one in spiration, came to manhood with the Heat of sailing westward to reach Asia. He found it deficult to get standers. At last the East and

vessels and sent him off

Colombus sailed westward and found land—but it was not the covered spice lands of

light years before the time Admirals neath, the Porteguese Vasco da Gan, to oal India by sailing around Africa his concreamentered the Mohammer in trade.

The light result is a valid to a fixed refers and returned with spices and other valuables. At last Portugal had a trade route with the Fast t

- Pro North Greatest Overland Pupl or M.
- National Grant of Markey No. 1 1

By this time, the price of pepper in Europe had reen beyond the reach of anyone but speculators and a dilemen. When He Cama returned, Purtuent forthwith set about keeping the price of pepper us near the old carnyan legaces as cossilar.

Discovery of the Moluceas

Later, the Paraguese explorers ventured into the waters east of India, went into the Sauda Strait, passed Java, and discovered the Mohaccas, the "Spice [slands," *

The Melucius are a group of half-schcetted accentains surrounded by the Padippines on the north, New Gainea on the cast, Timer on the south, and Celebes on the west. On the tops of taese mountain peaks spice trees flourished. The islands were union portant for anything but spice, but this alone was sufficient to put the Moluccas on every map of the world.

When the Portuguese, with their right of priority established by Da Gama's discovenes, took up residence in India and escapere, other strong countries began laying plans to break fortugal's spice more puty

At "Golden Goa," capital of Portugal's Far hast empire, the Loringuese East India Company exploited the site of spices and barred categores. Ituring the 16th rentary, when Portugal was muster of the space trade, some of the finest buildings in the country's history were created,?

The Datch first successfully competed for the trade by to lowing the Portuguese around Africa.

Uthough the Peringuese had mened the way, it was the Duries who brought to its centh the highly competitive East India trade

In 1600 Ocean Plicabeth organized the British East Im in Company to combat Portuguese trade.

At the same time, the Portuguese were unding their hands full with the Dutch, and finally were conquered by them. Then the firstsh came in, but the Dutch sccressfully resisted them and became the rulers of the fast Indies.

Over Portuguese opposition the Datch seized Ambana, an island in the Randa Sea, and made it a base of operations from which dry rould obtain the rest of the Molucess, Androna contained what was probably the afgest clove plantation in all the East Indies; and at that time cloves o unhanded tremendous prices in Europe. Cloves I rought back by one of Magchan's stips were sold for more than the entire cost of the three-year expedition.

Amboina also had nutmeg cianamen, cassia,

and pepper. The spices of Ambaina, Ternate, and the Breach Islands would enrich all of the Netherlands. The Dutch therespon made a space monopoly their goal.

On other near-by islands there were pepper vines and clove and nutmeg trees. The Dutch invaded them at alght and destroyed the trees and vines, so that no one else should profit by the sale of spices.

but Nature, unsympathetic to Dutch ambittons, permitted spices to grow able on other tropic islands of the French, the English, and the Spanish.

Cincamen, almost as valuable as cloves and papers, was most abundant on the island of Ceylon, S. by 1658 the Dutch had driven the Portuguese out of Ceylon. Under their rule the Ceylonese brought the cultivation of clanamon to its pank, only to see a new master, the lititish East India Company, take over in 1795. Cinama as tempined a British monopoly until 1833.

Two denoutives are sometimes given for the word "chive" the French close and the Spanish clove, both meaning "nail." The little "nails" grow on small evergreen trees of the martle family. Fariy mariners reported that under the tropic sun the trees exceed a powerful odor that could be smalled far off shore.

Natured Tree Produces Two Spices

The arrimeg tree is unique in that it produces two spices (page 418). When the outer busk of the possiblike fruit is removed, I reveals a large scarlet membrane. This is made, carefully removed and dried in the sun. Uncer the made is a brown kernel containing the seed, or natureg.

The fact that nutmer trees yielded (90) spices took some time to register in the minds of Amsterdam spice men bants.

If one time there was more demand for make than for nutmeg in Europe, and the crusty old traders onlyred, "Cut cown half

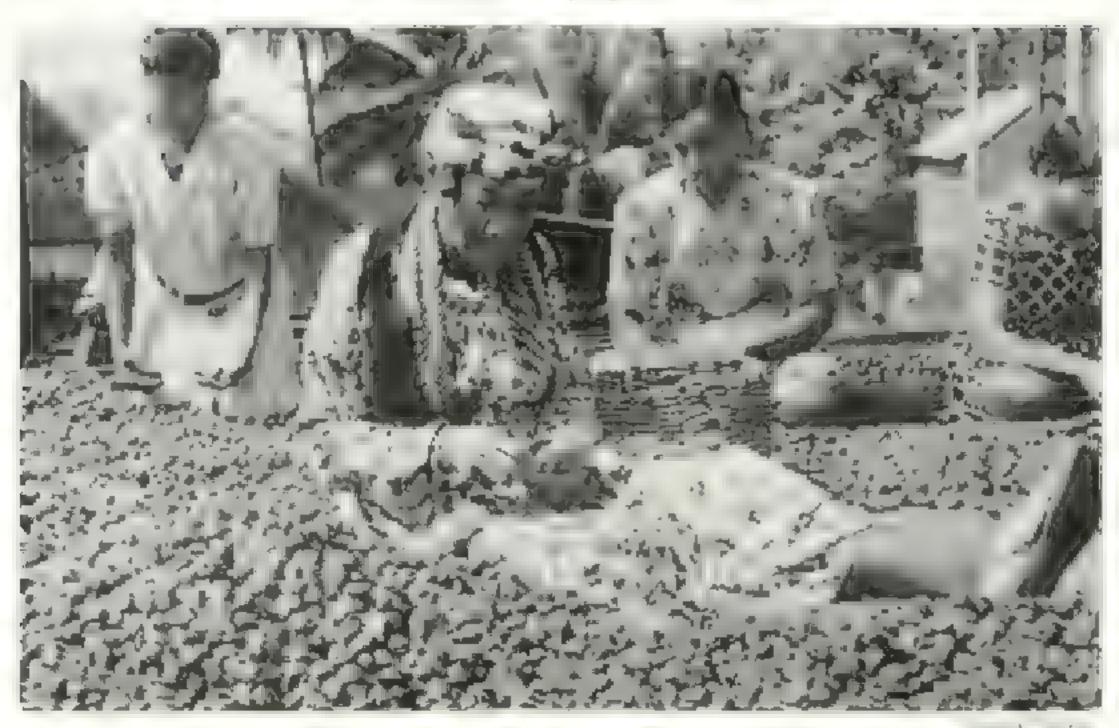
See "Arplanes Come to the Isles of Spice," by Maynard Civen Williams, Nathanal Comparation Malarette, May, 1941.

*Fortugal is Deficient "by Chement E Congre, a comber, Late; "Castles and Progress in Portugal," by W. Robert Moore, February, 1996; "Abiturinal Justice Through Portugal," by Harriet Chalmers Alarma, assembles, 1997; "Liston, the Clay of the Franch Bas," by Caffurd Allas a Timer, Navember, 1994, and "Liston -Gateway to Warrang Europe," by Harriet Europe," by Harriet Liston - Gateway to Warrang Europe," by Harriet Liston - Cateway to Warrang Europe," by Harriet Liston - Cateway to Warrang Europe, "by Harriet Liston - Cateway to Warrang Europe," by Harriet Liston - Cateway to Warrang Europe, "by Harriet Liston - Cateway to Warrang Europe," because of the Cateway to Warrang Europe, "by Harriet Liston - Cateway to Warrang Europe," because the Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to Warrang Europe," by Harriet Cateway to Warrang Europe, "by Harriet Cateway to

"See "Greater Voyage in the Amends of the Sea Morellant," National Governments Maiaziwa, Le-

10 01

Caylon Island of the "Lint People," by Helen Trybulowski Gillet, July, 1986



Prachble I mile of then on Normey over Yolk Two Spices

A set in spring the first of the property of the first of



Cinque Corres for Mary Lands, but Jampion's Leads in Sharp, So ev Quality

The Corresponding to the Corresponding to the oldest spaces

The Corresponding to the contract of the same family, when the corresponding to the contract of the same family, when the corresponding to the contract of the contrac



Not all the graphic strength to a to me P. Conner.

Grandma's Remedy, a Piping Hat Mustard Plaster, Holds Its Own in a Day of Miracle Drugs

The second of the property of the second of

the notineg tree- and plant more nase"

To prevent a crosege from gero making and thereby from go ving classibers, the Dutin kept these ready for shipping at a line bath for three months. All, therefore, hore a white contant of lime water, and even these of traction, others because the lane prevents much infestation.

Malays called the natures the pala. One superstition was that it would grow only within the voted of surf

Some histories record an incident of the

18th rentury when Pierre Pulvie, administrator of He de France, now Mauritius, para-1 yest to the governor of Am a nac

A Visto / Smaggles Seeds

Foivre is reported to make asked policy to a shown the natures plantations. The content of the property of the content of the plantation of the content of the plantation of the said the plantation.

When I was lett Ambains, he had both natmer and chove seeds hidnen on his person. He took his trophies to Magrettus, east

of Madagastar, and grew trees from them. Ginger was planted on the Moluccus from rents brought from China. It is a pur re-andyellow-flowered reedike plant, whose thick, pungent, and tuberous rocks were dag and stroped, and then dried or cambed for com-Parrie.

Long before Europeans had become acquainted with it, the East knew and revered ginger, asing it for a flavor, as a candy, and also as a medicing. Ginger was not cultivated on a large scale until the Sparish planted it on Janualus in the West Judies.

Discoveries in the West Indies

While tarmoi, raged in the East Indies, the Spanisards were making rare discoveries an the West Indies and in Mexico. Among them was a West Indian tree called the]ที่เกษย*o..

Its fruit contained a flavor like cloves, nutmes, and cinnamon confined and was known as allspice. There also were cacao,

vanilla, and fiery red peppers.

Spices played a part in the growth of the United States. Soon after the Revolutionary War the American merchant marine came into existence.

With the former colonial trade parter now closed to Americans, they booken far afield for

new ports and new trade routes.

A New York ship, the Lampress of China, opened the China trade with Canton in 1784. Massachusetts shipowhers became rich, and with profits from their cargoes of tea, silks, spaces, chinaware, and other committe wares they built many of the white houses that still 医生物 医毛

Capt, Jonathan Carnes, of Sidem, leaded a cargo of pepper in Suntatra in 1791 and sold it back home for a profit of 700 percent. hor a time Salem was called the "Pepper Port." To 1505 the United States exported more than 7,500,000 parends of pepper, much of which had previously been under in Salem.

Yankee sea captains brought back from the ports of India itself a new flavor in the repertory of American foods. That was carry, a subtle blending of several of those famous spices which have gone into the making of history.

Occidentals know only one curry; in India each kind of firm and lowl has its own blend

of curry spice.

Curries in India give zest to commonplace

there. One favorite carry recipe is composed of comunder seed, Madras t temerle, cianamon Caramin seed, caraming seed, ferrigreek seed Jamaka ganger, cayenne prapar, pimento. il. Ly plat long proper cloves, and nutmeg.

Mr who lin , s & today compete briskly, but their operations are a far cry irr to the tricks of the trade of a few centuries

보기다.

McCormick, French, Shede, and dozens of other competitors throughout the kinited States are united for their common good in the American Spice Trade Association, oreof whose principal aims is to educate American cooks in the proper use of spices. Its influence is wide-spread, since the United States is the ward's market for spices teday (page 410).

The association maintains a staff of techtileal experts who are forever on the Indeput for new spice sources and ways to use them. For many years practically all mustard seed was grown in Europe, South America, and India; now much of the American supply comes from California, Mentana, and Washington. The flust thustard, however, still

grows in Lincoarshire, England.

Crosby Galge's big moment comes once a year when he belys plan the meno for the association's control dinner, which draws spice awachants, all discriminating trenchermen, from every part of the United States.

The prints the mean on his private press. He always gives it a distinctive touch, such as using, instead of itck, a yellow dye made from saffron, one of his favorite spices,

Shakespeare Wrote of Spices

A recent menu bears a few Shakespearean words on the subject of spices in which Clown in The Winter's Tale, lists his precis for a buherman sheepshearing feast: "I must lave saffron to colour the warden pies, mace; dates -none, that's out of my nute; nutmegs. seven; a race or two of ginger, but that I they neg; but primes of propes, and as many of raisins o' th' sun."

Spice men show no places at reports that concentrated flavors, made by distilling the essential oils of spices will a meday take the place of whole spices. They feel that man will be rating products of plantation and farm, and not the test tube, for many cen-

faries to come.

"Nothing heats Nature," they say,

A star take a telephone the same the same March the stage of the same and the first telephone the same and th of the Sutronal Geographic Society by the feet of the month to affect the following mounts from for ention s, if you deter the address changed for your May number, The Society mould be notified of your new address and later than April first. Be were to include your postations amonhor,

NATIONAL GEOGRAPHIC SOCIETY

GEOGRAPHIC ADMINISTRATION BUILDING SIXTEENTH AND M STREETS AGRISHWEST, WASHINGTON W. D. C.

1 1 1, 4 × 1 1, 4 (1) ROD, RT V. ELIMPIG, Tone Del I FRUERICA, PONT & Assistant Ten saves average is a second of the second constantion. ALFAANDAR WEIMSRE Vor Lazens Beschie T 1 P 1 96-9

JOHN CLEVER LA LABOR, Mr & President. THE MASS W. MICK SERV. Secretary VERNOR H. BREWS FR. Associate Secretory MILLARY M. PAYSE, Award at Secretary. h CRUG M. HANDON, Assistant Semenary.

TYPE TAVE STALE OF THE NAME OF BUILDING ABBURGENT

GILBERT GROSVENOR, EDITOR

JOHN OLIVER LA GORCE, Associate Editor 1 J. R. HISENSERAND ANALIS L MERRI condition of Gelevant, but he 1.00 % b #154 MELVILLE MELL GROWN WIR. SELYNARD CWER W LLIAMS 1 () Sec. 1 1458 * M Linkell Y W. ROBERT MORRE Cinici Circ arranses Francis Est una militar to by the property of the second NEW MARK I MATERIAL a Cars Manual No. Research Contographer WILLIAM I SH DEAS 285 (N. L. 3) 1 - F | Black 1 ---Car granus of bradit Chief Photographic Laborators William Street St. F. HARROWS LATEN WALTER BLAVERS LLW YEAR > Internal Stuff 7 at a D ... [INEX K BYAN RAYM SICH WEST with the Sou Brecher of Adversions. I has not go that bean take Right (114,654) TE TATE BEST IN LA DATE L MASON S THEFRIAN. Henry y Baget at Editors Staff and Director of Arternauna BOARD OF TRUSTEES WALTER SCHOOLSEN C. if ii, we we let Commun. of the Board Astronau. Personne and a source on of the Defendance and Telegraph Board Misse War coal Bunk 1 1 1 1 1 Chargery P. LETTIEING President Company Markets

[15]5N J BERTS Arestor National Bargan of

EM BLY & LANGE United A signal Compared to the Compared S. Spayy, Jürtpost, Presidejal. the second secon

Letter 2 - Cl we common support of Lagi there ex-47 3

a c, thinks Man A. anni Perenter II 5 Canst

CONVERTING E. BUSHILLE фонция и морга, то Миделов TATRON A LINE LN

THE SAME THE REPORT OF Priendent in Jeneralan Afrager

Torpart repried Agrica States

Secretary Southwards Lasenberta.

GH BLRO Glausy'hbaufa

themself the Armor Renned

LHARLES OF LABOUR of the county burns.

Land ter and Nationalist

LEUYIU b W LLSON harten by A historian of the heard t Legitora de gipti Potatica. r c try I

RATEL NORRIS

31 1 44 1 1 Assert as a place of that he mount

THE REAL PARTIES BATHLANDERS

ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

to mitte out the second of a little was founded. to be we come both the origin. Then "tend belong! Conceptings in a fix or before parties All and self-transplacture processes. 20 The Manufacture could up to read at this fly to provide. ME spragger in a parketive

Articles and git of spraying are thereof. For material, चित्रा भी भूत्र एक का का अन्य अन्य के में कि में कि कि कि कि कि कि

to add took to the editor of and phoregraphs surrers Lartly being much. The Society and apprended type. ी रहपात एवं if the law zic to achieve the patients of

The Soulety a textural example that have jumbed fracti the high and had strong of the southwestern blue set States. examples of the form that are not to be a larger in the for

Ta Menalo, The Sockets of views it postable at the tion, Juniary 15, 1919 a few months for a local power of mixand the American Lock is the flowing date. I have do bugs at the selection and the Blancoe plane control which in classe is 170. then, it Newenberg, up it is a Appeden Cerrelates I. ... It. structed in you wears northing beret one dates in · Dietalie in il ferminio il Baltico nelle in la catte differe comi cultures, presentably and

the horsest are at 1921 to a fittle eponeous forming Conflicted her ghat for heavier condition 1. S. Jurny. Mr. Christe, the work is subject and once Experience II. as I apply Afterior the interest and bug to the in the declaration the finish of the ground and mean of a term of several trace of enstantia, a god what recifie is entrasphilars water

The Marketel 1 of the market con Brand place regarded and materials that we at the specific 1947. Then man and arrowed mapod Jugani — Society a Oberton a It has prosper of the time.

The nuclety competated with Dr. Welliam Books by or or or a suplementations of the marks, during which are a second the will there in the first feet attacked

The Sections agreed her too and a letter in \$14,000. NATIONAL DESCRIPTION OF THE PERSON OF THE PE some the congression of ppropriation for the and the state of t 1 and the second s



Innouncing the new 1949 Studebakers

Anew vegue in interiors by Studebaker stylists!



A SEA SHOW THERE which has been something a port of may a to the second of the second to be the State of the first the and the first but affectly ? I fit that had also mented a The special se

A figure Containing to the man per ; in mention out the trigger plant to the state of the state berger his his new latters Company of the second of the ac-Property and a second

had spen the doors at the c a () 5 | F | 1 | 165 4x - 5 x 11 (6, -1 submounts y differently along nother folgot of the test of sides traffic buse as in i

-- 44116 -- 4 -- 11212 19214 -- 4 -et title to part to the same of

about the same parts to whome thirmly is true to any 114 x 51 121 x 1 x 112 pc 4 co 11 4 1 B south the south on units expense. II or but the contest to be selected a frank a plant II a same _ 18 - 15 | 1 F

Lat the fit error of the taker to the a six to tred your many to 1 ch thus to the real th man the or literate continue of these Paris Start akers.

Harry Arthur San



Cock-a-doodle don't!

W. Il Nou pass a milestone in worr caree there's always the temptation of the article crowing.

For instance, Note half of deliars that safet now tanks over a bill on deliars. That safet of life instance. As a matter of tank, and the more than 500 life companies in United States, only 28 have topped this billion-do larmack. So probably we could be torgiven for maxime unite a tass ab at it. But actually what's beliefed this billion.

The real point, it seems to us, is that almost 200,000 people all over the country have chosen our mutual company to help them become financially independent.

Families and individuals—they have hoper and plans for the future which they value at one billion doltars — and they have placed them in our hands.

this in dex as feel proud ... and humble at the same time. That's why we re not doing tuch thus one

Aut when we find out this, monthly checks

1. scop to thank what each one means—
a deserving student sent to college... a father

25 family held together under its own coot
a widow materained in decent comfort
an elderly couple tetred to well carned

That's when we really feel like crowing!

"See your National Life underseriter at least oute a year"

POUNDED 19 0
A MUTUAL COMPANA
DWAFD BY ITS POLICY, DO DERS

NATIONAL LIFE
Insurance Company
NATIONT
VERMONT

DESCRIPTION OF SHARES OF STANKS IN MICHELLA



See CANADA

. . . SO NEAR IN MILES, SO FAR IN FOREIGN FLAVOUR

A simple for the first and the state of the He at the first of ear ighte horactan was time to salten, IN the restriction of the second of the seco Committee and of the property of a some assisted the control of head and the second visite William to the other or to the plant of the



e 40 cr 3 y by 1 may beath APA TOTAL TOTAL h promise a second second h to a full t

territory and a section h (1)



. 2 * .

CANADIAN GOVERNMENT TRAVEL SUREAU

Che car a fair brace

N. CTH 化二氢甲基基二二十二十二二



HERSELF GREETS YOU WHEN YOU ENTER THIS MAGIC DOORWAY

Samething race happens when you enter your Air France Comet.
You stop into another world... where you re warn y without a complete with the place of the place of the supere out on, served with y magn wine of promption of feature..., the it france that if , ... from the very cast of your trip. And as you spend toward Europe in your leading to design the comet... the newsest type, long-range Constallation... you're released a decrease that the comet is a proper of the comet...

When you go...GO



Fig. 1. And the property of the state of the



What these man-made gems mean to you

MANTER SIX SUMMITALL IN COMMENTS
OF STREET STREET OF SIX A PROPERTY OF STREET

A column of the first of the fi

Both of a print and the print of the print o

to be a first of the state of t

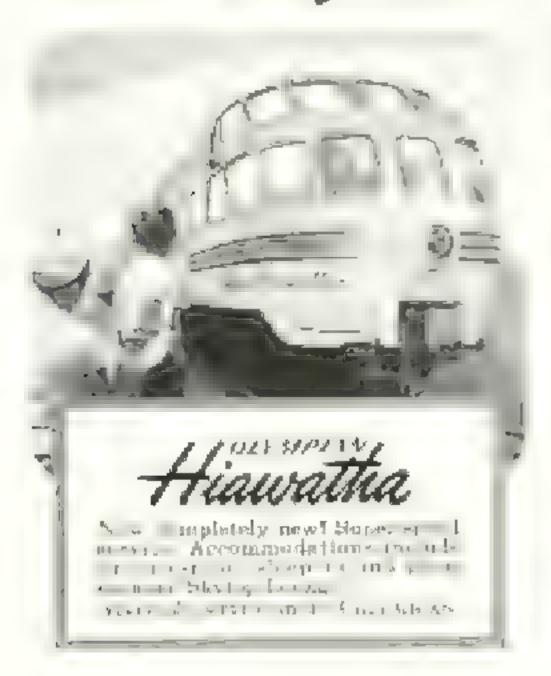
ENION CARBIDI-

SO RESE CONDINGERED IT ... NEW YORK I IN Y

and the first that the state of the state of



Couldn't be greater ... couldn't be grander!



Enter through beautiful Gallatin Goteway

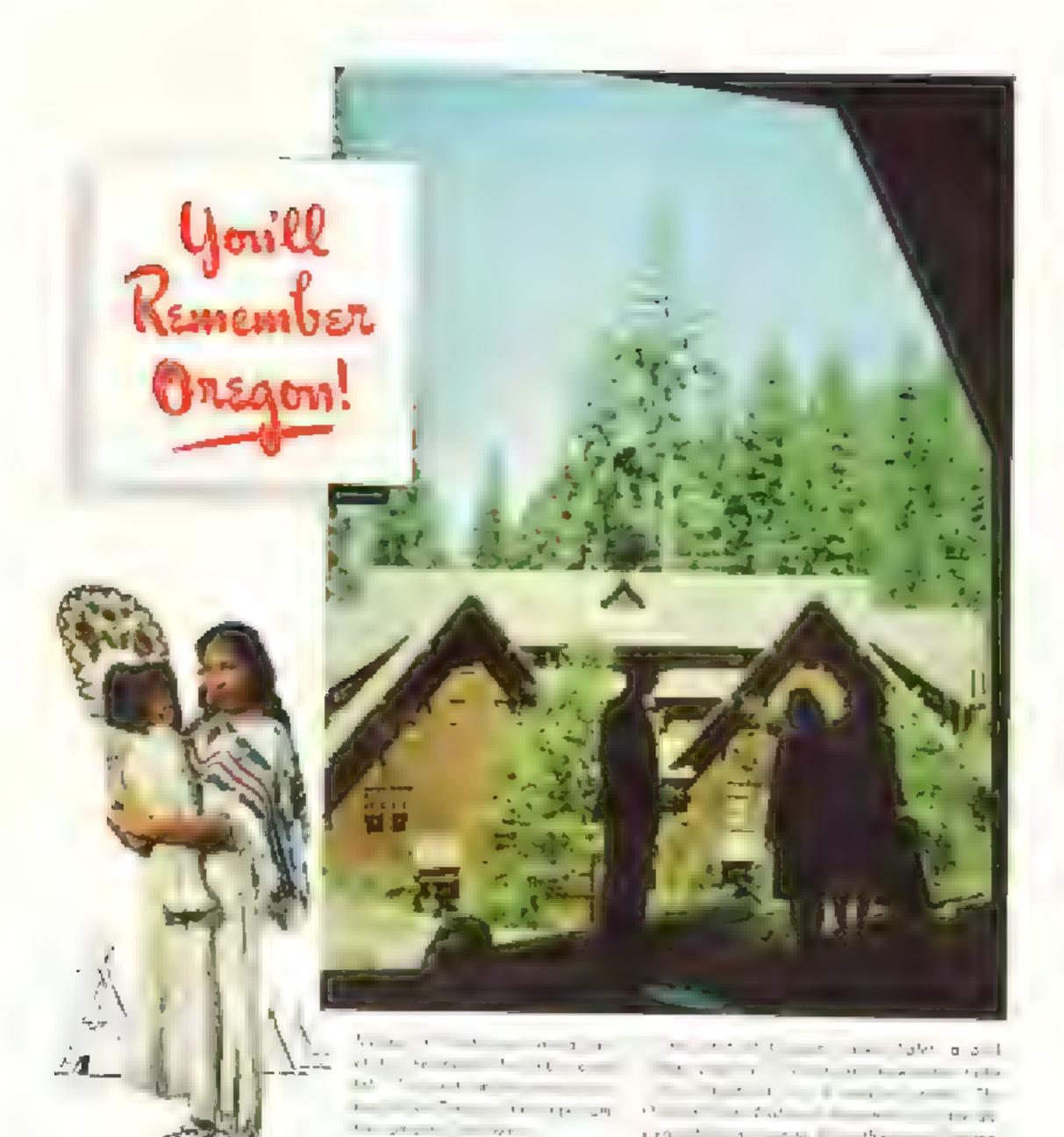
I usee Yalowstone at its best, you'll want to onter via The Milwaukee Road's scenk Gallett (Gateway, You get 55 extra miles of mount, in accroring through Montana's dog teach coastry. And what a world of womers desired.

Assert of Old Faithful and so resolution govers the beauty of the Grand Canyon with its thundering waterfals the enchantment of mile-his Yells with a large of the beauty of the beauty of the Urand Canyon with its thundering waterfals the enchantment of mile-his Yells with a elastic bear all and buffalo the patels

FREE ILLUSTRATED FOLDER

. tells about Yellowstone and the Rocky Mourisin dude ranch country. Write H. Sengstacken. Passenger Traffic Manager 907 Union Station, Chicago 6, Illinois.

THE MILWAUKEE ROAD to fine the state of the



Add the first transfer of plends at regards some record dense I person in the second of the second A THE THE PERSON OF THE PERSON akes in a in house of a contract of the contra ar any marget half surfrager to HILL THE STATE OF THE COURT rumiera Pareza falique leure acadas Hartings of the following the first of the f

> Let Oregon a 32 page disserted book at help you plan. . . . Sand today for your EREE copy.



If a second

I a no I to a 1 I a R a to built the same of the sam Garage Contracts

fa trep		_	

600

Which Type of Traveler are You?

LOUNGER?



T. In his least to the Silver of the state o

PACER ?



MIXER?



3. Section of the section of Sections, of the Section of the Secti

SNOOZER?



4, to trap loop the transfer transfer to a construction of the transfer to a construction of the transfer transfer to a construction of the transfer transfer to a construction of the transfer transfer transfer to a construction of the transfer tr

There are quastion about 1, \ 1 to a control of the control of the

Go Pullman

THE SAFEST, MOST COMPORTABLE WAY

What's behind the dial?



Bearing the dist is the secre of your business your records. Think how could you continue after fire destroyed your inventory records. Accounts receivable tax records, deads and contracts? How could you even establish proof of less to collect your fire insurance? 4 out of 10 firm never reopen after towns then records! That's why your says is so important!

How You Can Be Sure Of Your Safe

Lamb for the lated of the Hadorwellers' Latingarories, Inc., on your safe. Don't from way sould show decome a nave of a Madeen Median union jume their tanglement tente with planey to agare - you can depend on Moster.

There's a Moster and to meet your requirements smoothly, at less than you'd expect to pay. Find our about it now, before kire etriken! Fill in the composibefore and mad it mee.



Street with Laked buts with harping

Mosler SA Co.

Main Officer: 120 forth America, More Turk 1, M. Y. Construction on product action. Protection Hamilton 13 Largest fouldance of Saltest made Viscoles to this World



Building of the U.S. Sold Storage Vanit Hours HET MY FEAR HE.

The Masker S fo Co., Dept 43 370 Fig. D Ave., New York 1 N Y

Please sand the The new free broken "What You Should Know About Some "

If The Name of my neurost Muster Benter

Section 20

1000

100

f's v

200

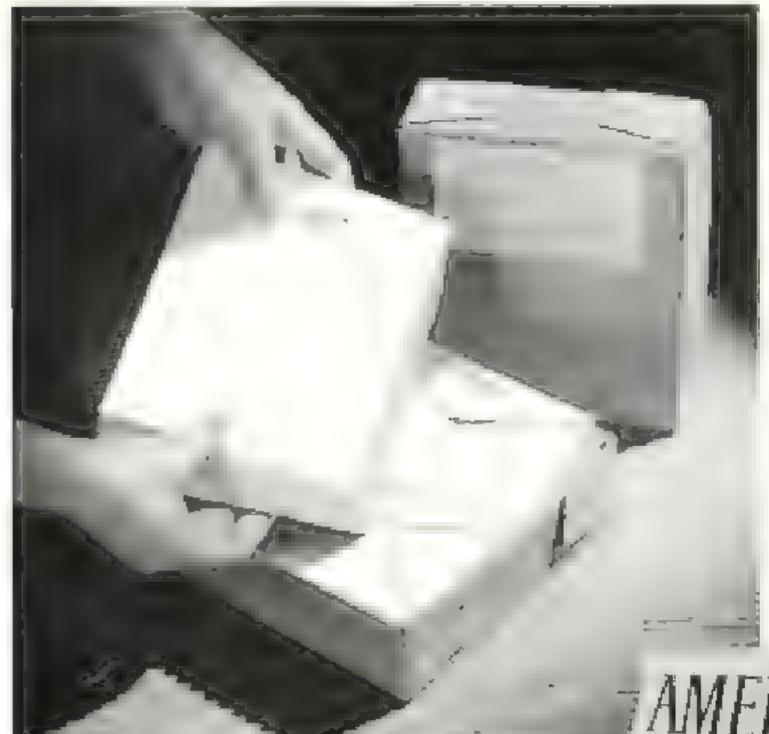
State

The Fine Stationery in the Plain Box

An emalence of the energial sections Il so sobeps , tabers out est 15 Hert 2 htt green en 3 Konsang til hin groupe of her per all the electric states. A relative the sple part of the date of a resatisfication of the first of t control of season as a proper to proper _ - 11 - - 11x L

Output profit is ext | Y and it is a second Marine at In the United that the terror of the second of Second Stript Williams Street and a

TRUE AMELIEUS SEATURE DE LOS COMPANS TOTAL STATE OF THE PROPERTY OF THE PARTY OF





Delune Parkage

pres chility



Lucclope Parkage

1 1 2 1 2 1 1 1 1 'I be the end by m cPid I

Standard Package

200 Note Sheets 100 Envelopes S100

AMERICAN STATIONERY



That's my traveling secretary—the new Electronic TIME-MASTER



Distantian dans? Coise of the set Mandage of the set of

DICTAPHONE Electronic Dictation

Many I want to the state of the

talqril in resuma oli sileri

	· (' (C. (· · · · · · ·)
Your Name	
Сомраку	
Street Address	
City & Zons	Stara



Just a minute... while we move a mountain!

The partie rate of the parties of the rate of the parties of the p

No setting the set of the set of

A lat of things to pel brings durith a very transport to the better transport to the better transport to the part of the part

things lat mean better server

The or is was rathrones can get

provides a line of the control of th



秦本法於司任"草草"不,以"专



testum to THE BAILROAD HOUR, presenting the world's great must red thews Every Manday evening over the ABC Network 8-8-45 Ecotom, Mountain, and Pacific Time: 7-7-65 Control Time





Now! Save on every food dollar

-yet eat like a millionaire!

THE CAN STRAIGHT Bury time food you mend work.

If you'll change tour thopping boarts fast a little hat.

be collection to denote per or a large platests, or path of contracts contracts



* The street

frate R = 1 | Qx | p = 2 | Qx |

The section of the street of the section of the sec

was or some the factor of the proper country

When you are a realized to the area but a variety of the proposition in the other a tend, it when your past door'd feel like it.

I selle the surface over the

The second of the process of the second o

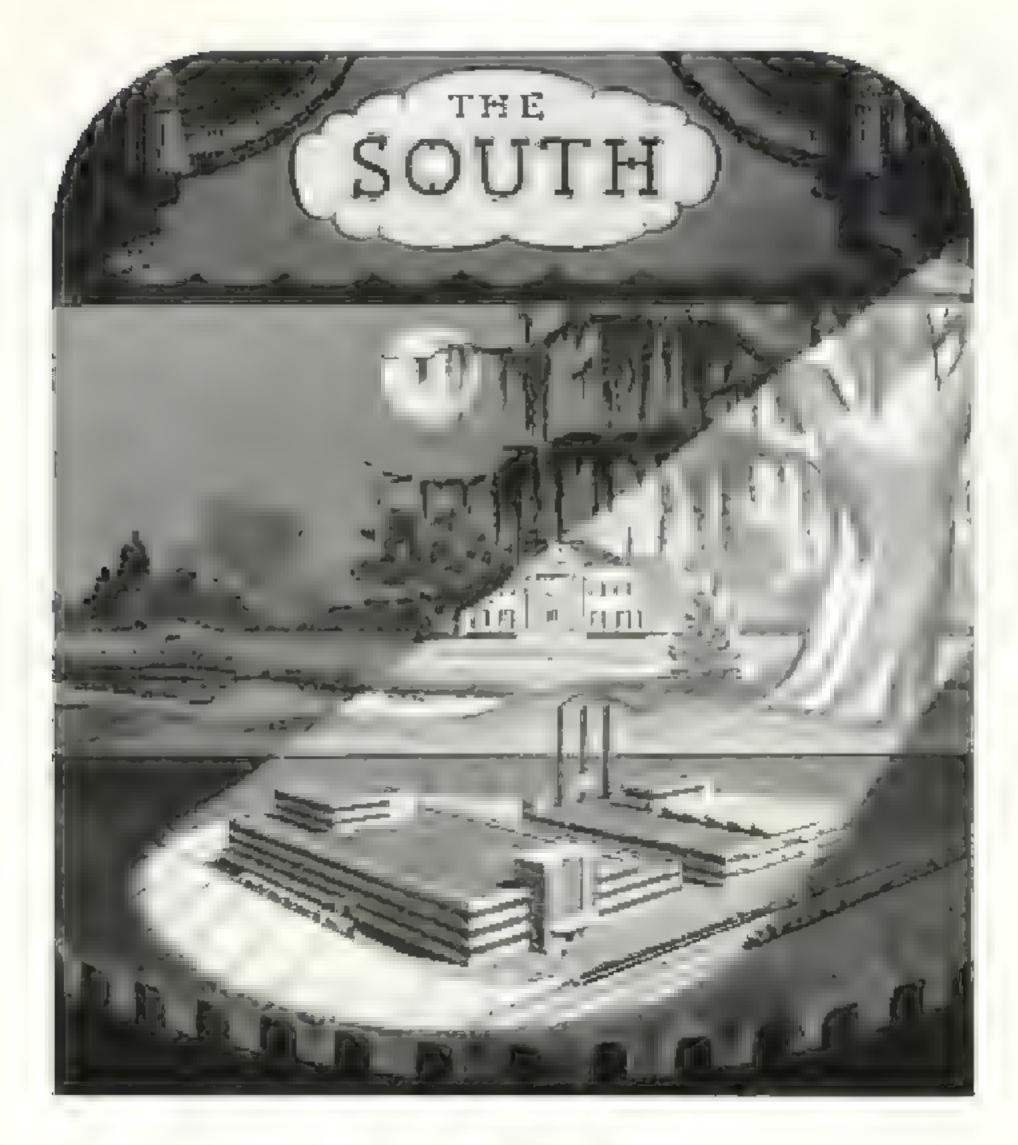
Best of all, there have a trace or not used a superresonation and continue there are a continue as

to the the resource and proceed was

The factor of the control of the species of expense to a second or expense of the species of the second or expense of the second of the second

we are set below to be because the break so to a present to be briggener 2, forms





Center of the Stage

One new industry after menture takes the spottight when the inspiring story of the Southand's tremendous and netralization is told.

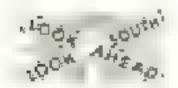
Against a luckground of teaditional charm and historic beauty... supported by a full cast of a statal advantages and research a such factories, new and

old, are thriving, growing, and facing the future with contidence . . . all along the Statemile Sambern Rudson System.

In this great industrial drama there a a vital and rewarding part for your factory.

"La h thoud-I non "outh"

Emer E. normi



SOUTHERN RAILWAY SYSTEM

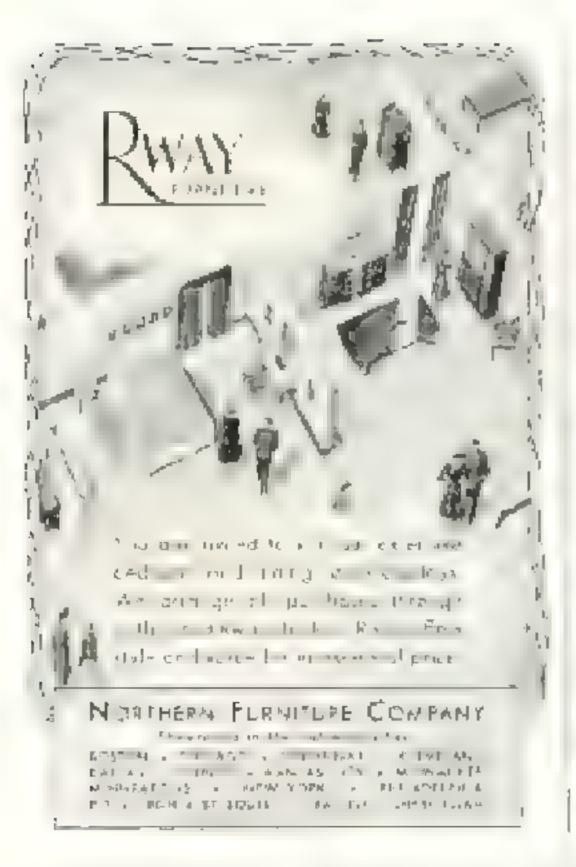
The Southern Serves the South



Our or a notice of a little princes who was serv good, and kind to all about any And tecrose she was no mod, her fairly godinother appeared to her one day and said. Then giving a month to be arrived When you book in it was will see and hear thing that are far away—even to the fairlest corners of the earth. Through it, skilled musicious will play for your of learned men will yeak to you. This hackanted Mirror will keing to you much plantate and deeper an fer-tanding, so that you may the your life in wisdom and happing.

There is no more precious gift that I can nive.

















FLORIDA HAS THE ANSWERS! FOR YOUR SPRING OR SUMMER VACATION



LOOK TWICE

Figure Form the second second

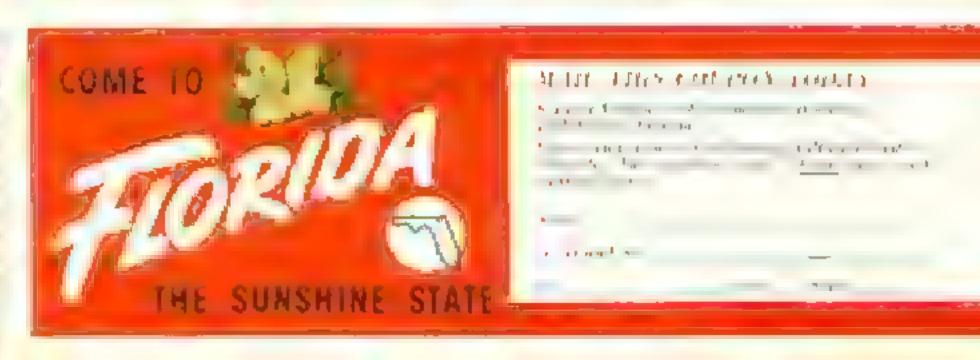
Made purple source like the first series of the series of

Tirk of the standard of the party of the standard of the stand

The prime the state of the second sec

Here we have a september to a some a september of the sep

The product of the pr





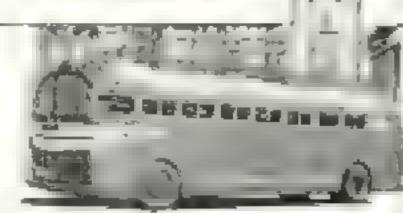
- Safer than costs, but just as spendable. -Brerywhere you inquel
- If last or states, uncountersigned, you get a prompt refund.
- Afford instead identification.
- Good until aced.
- Cost only TSd ard \$100.
- · buy them at your book

NCB TRAVELERS CHECKS



BACKER OF THE HAVIOURS CITY HANG OF ACH YOUR First in World White Bunking through the court the proper to the many the companion of

Here's the newest most convenient way to REALLY SEE EUROPE



You canky discover Entope Mount with Little loave. That texts sep-R'arke arate Laur rini Arisin Engrange Verley a the legal of premited applica-Laples made result skawnere it. Fr hands of process for the world of for time of A THE WHITE PARTY AND THE PART Security of the second att fivations (95 cm) to

Ser to a colorana are the direct law. Made Laste Caractet rene the shorter let shortly a book a

> ASK YOUR TRAVEL AGENT Ot write for felder to Best N. G.

LINJEBUSS

Swedish Zimm-Ebropeon Ben Lines 630 Files Are., New York 20, N Y



VACATION on Cool Calorful

COLORA

I wont and ench are a hiselan Old West vaca on in 4) I - GI III - N L P | FITTE I at the real and the first The transfer of the state of th orrion to the particular following that the talk south to be

COLORADO DEPAREMENT OF

285 State Copytol - Denver Colorogo Pleases to min. Across and I pune to als w See 1 2 low year 11 m but man an ебірьше удавчен Авсь е.

Deart from the of retain Made NUMBER

Address



Never before a pen so completely satisfying

Its the

larker "~"

voms—for keeping of giving—from 7 rach covers and black. Custom points.

Pens, \$13,50 ap. Pencies, \$6,75 ap. Sets,

tom \$19,75. The Parker Pen Company.

Janesylle, Wis., U. S. A.; Toronto, Can.

SUCH writing case, such depends that never before existed in any pen. Only

now have new materials made them po-obje-

With it, writing is glidling. I ven filling w

conses a picesure - quick and sale. You see

the link level. There's a new guard against

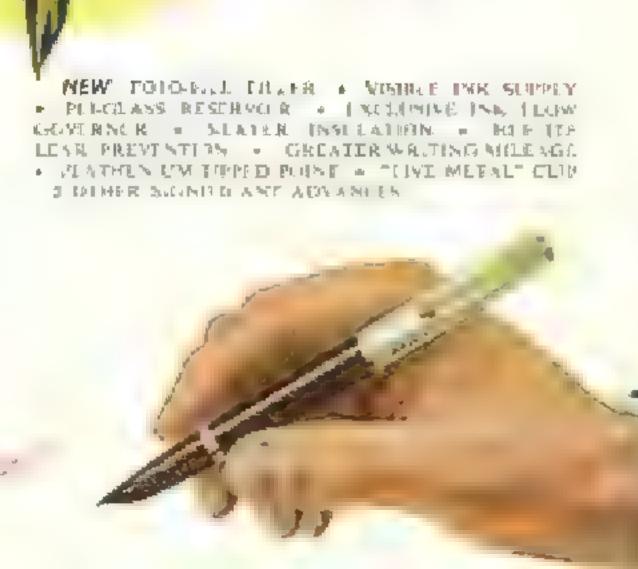
But these are only a few of new 51's ad-

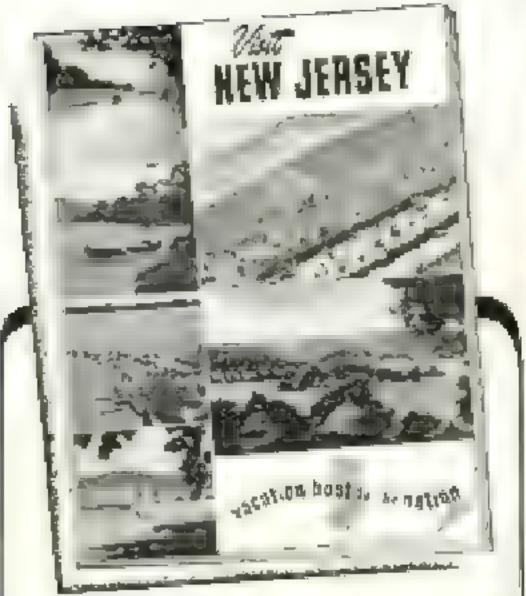
varitages. To learn the full story, the the new

pen now at your Parker dealer's. Choose

leaking leven at the highest B ght levels.

14 precision advances mark the new 1 51 1.





... for a glorious preview of an exciting 1949 vacation

This guide book is a MUST for plan it is ahead for a womeerful value on. He pages makelif a pacture story of gavto the state of th that mail a of safe to tell and the change of the All the astronomical क्या बाहु अरुवा कर है। एक पूजा के किया है। surface to the second of the second of the THE KILL OF BUILDING Track of the track of the 18 cm Carry 15 New Leas, But Chill a Tanks outcome to It would be it it the Meansthin that the second preferred to place to the state of

- * STASHORE RESORTS * INDICATING PISHING
- " MOUNTAIN BEFREATT
- * MESTRUL LAKET
- * BAN MUNNUMALKS
- * HASTORIC SHRIME'S

VACATION HOST TO THE NATION

MEW JERSEY COUNCIL. DEPARTMENT OF CONSERVABION AND SCONDING DEVELORMENT, a miller SEATE HOUSE. TREATON 7 NO 1

NA SK

ADDRESS.

CITY

STATE





" Res I Rennal 1200

n 4 11 4 1 1 m 4 11

SUPPLIED MATHEMAL! COLCUM

4 , or the " of the

See al due tomo each of -

2 - - 2 341 24 0 = 1 real all the best of the and the state of t 61 07

11 1 1 1 1 COSTRACT CATALOG UPON MIGHEST



Sightscoing 4 a. d. a. d. a. a part new of the first partition open to make a constitution of real-state, account of the plan 3 for a fitted ways a Laperter had to desprise the constitution of Campilland State and a first fitted with the first partition of Campilland State and a first fitted with the constitution of the cons

"Choose one of Canada's 10 most popular vacations!"



The Scenti Regule areas and a language of the language of the

Education of the Country of the Coun

Here they are, as cere that in a 19.8 survey of U.S. travel preferences: Abaka throws - British Coloradous - Can indead Rockins - Constant and la Rud Four - Flattern Cit. - and the Laurentians - Caspé and the Saguence - Lake of the Woods - Marithus - Province - Highlands of Ontaria - Woungeg and Musi-on line. Make voir choice—then have your occased Cu to han National office give you are whole story - time ores, places to see and stay, costs—everything your needs to bely you plan exactly the right variation for you. "We'll tell was priore and take you there."

NATIONAL

THE BAIL WAY TO EVERYWHERE IN CANADA

Cracker Notices off as - 3.5 — Series Adfalo C. aga Cin mat Deirot.

Crack there is an Acquier Advisor of them York, Peladeration.

Contact of the address of the authority of the property of the address of the addres



See your 8mm movies at their very best!



with
this
Ampro
super
quality
8 mm.
projector

Send for FREE C revior

Trackers and Track



10-6-1-1



ANTENNA PIR NATUR PAR NATURAL AND A COLUMN AND A COLUMN

Spring Exploration in SAN DIEGO COUNTY Statements come now!

the work of the property of the later of the

BONKERS CHEMPS

to the hander

South. Yes, I've high time you head son han Dang a winter there is more of everything the true Southarn Cauf.

An area to the said of these

Send now for \$800 i tendiu/6
Sun Nivego - Co Horney Clab



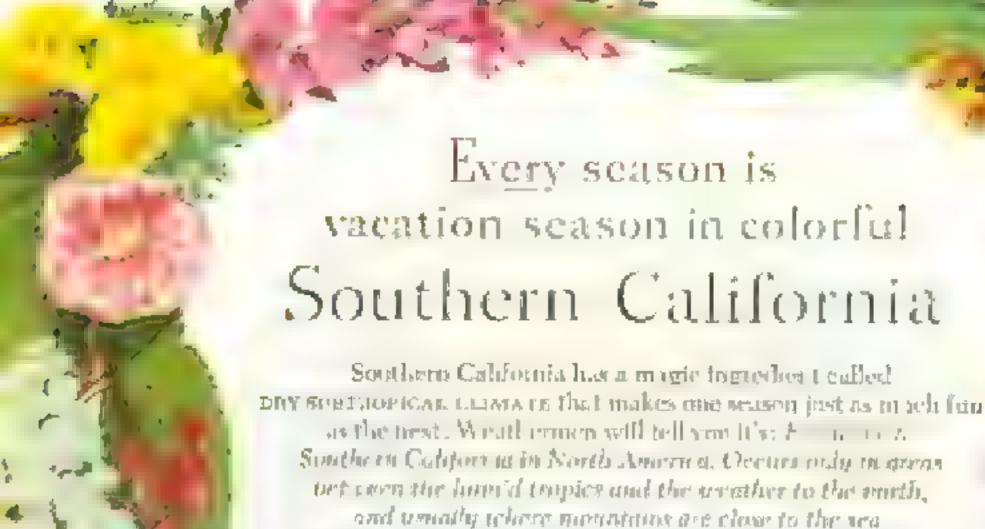


the costs, so hope and decreased presector month same can recult on the health of share was even to see the sector 32 page to extend the sector seemed how to thoose them." Isomorbias — and how to thoose them." Isomorbias — and how to

HILL STERM, A DE Special Comment of the Comment of



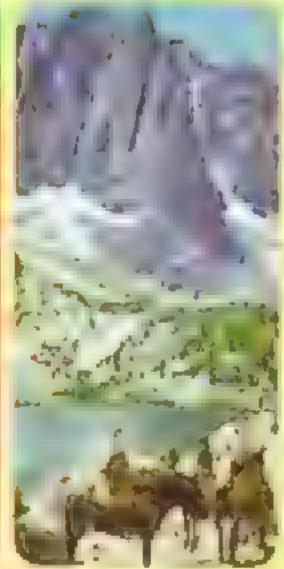




Characteristics are Mild proffer pour cound little rain;

much sundance, abundance of fruits and dowers.

















ir event warretts, blacket togethe Swimming And he had been deed for the metal and White was the second many as the second was a more described flags of no lunar months of Million to the company of the form of the second way we de constituente perceta, a reta. Opera uir comperta, assu bul 1 1 'Arilia ... in 1 1 descripe de

Services appelled Lat. Long a by over the bost of the trees wenters are first

While the old missions, foreign market places, the pipes n = 6. I to site cert test of the septil I, we or all fautonous licenses. I poeks it here the consens for general to p. 31 d. experience and the state of the med Siran i tree transfer in Jan Visitors Bureau 517 W (6h St. Los to ... 100 L

> No saw physical plans to move more to Southern Enfathering to live unions researed in advance of personness happens.

ATL YEAR COME OF SOUTHERN DAL FORNIA LID The first of the second of the HELPHY, IN THE CLE SHEET SHE the state of the state of the state of

Free Banklet Mad Coopen Test	
a business of the little	11 7
taralli factoria	
1 a 1 s 1	Ly Owners
and at a second	•
2 10	
4 4	
-1	y ⁵ -01



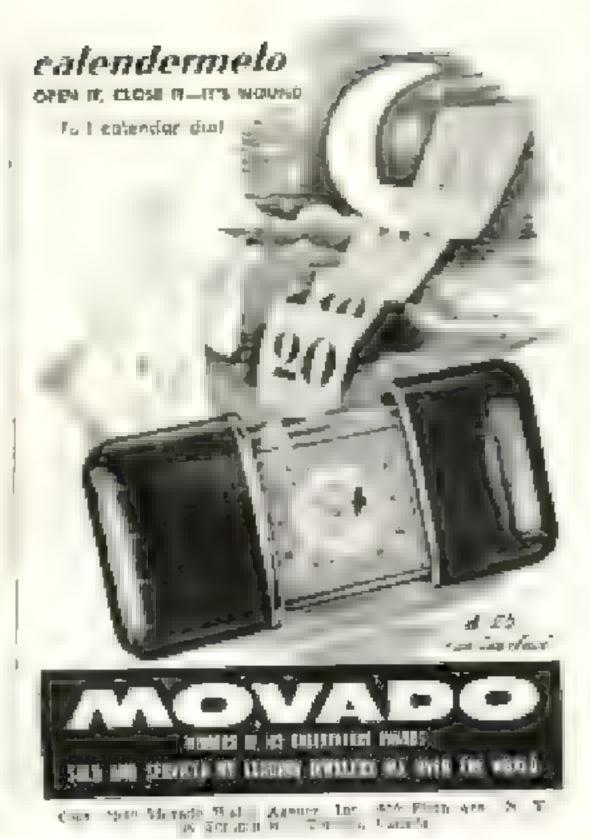
ssour!

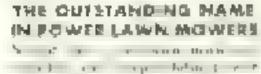
Inspiring BEAUTY! · Soon Spring will

blossom out in Missouri veration) and of inspiring beouty. See the femous degwood and reduced pointing the country lide . . , the fresh oir perfumed by apple blassams. Many resorts now open. Come. . . play and rest.

Send for FREE FOLDER Just send postered with your eares and ade est

MISSOURI DIVISION A RESOLUCES & DEVELOPMENT Dept. 636, State Office bidg. Jeffnragn C tr. Missouri





all an equilibrium for the Ex not noted and the



Service for the first terms of t Management 18ss other 2 ---ter le t ; 1 (1 44) 1 2 2 4 4 14 7 III 10pt 1 4 . .



PARENDUMB 21"

1 1 1 1 1 1 1 1 un necessaria de la for the second of the second A series of the PETERS OF THE PE fr to g gain or



ROLLOWAY 25

0 1 4 2300 1.4 A ... hand the



SPEEDWAY 32

1 1/2 1 ÷ .1 7 . " ---12 1 m (1 4



STIM-U-LAX JUNIOR

The World's Finest Massage Tustrument

NO OTHER LINE IT!

The I I to but a of all County, book a lower and Exemplay Conference MI LAX ALLEGE STORE from the tentral of the contract of the second the second of the second second second second since guild' marking or or gly granted to Large in Can Tills have no contract the contract of A remail a produced the general that a make hasanda prodes an Orlanda and hardle



Get the lacts .. write far FRIE Mousege Manual

MAIL COUPON

print Warrant Land e secure and some t eleb dage to figure , go Was to 1 4 mod hine to be to the second

MARK BOOKETT

, in this feeters

of the second second Company of the Paris

and the second of

with and

enter Orber folg Can Doge, 250, Perton, Will present spirit from M. sange Street. HO W 시 수사는 는 사 21617



This messenger delivers a million words a minute

Congress a state part of the illicate to be observed to the ac-ATT SET WELL WESTER Flor pignor 1 tight to the state of the stat Her I produce to he word;

This was I bruden by puttinga segree last televation communicaent use statem there is pread to be to I demension Reproductions of and the state of the news of most arm a a a includit is part or dis-Striphons, Engerpress hark Afra ts — join travel at 150 pert miles a second!

Recently, at the line real Moder Italian enterplant Science of work... lance of the land was THE PHILIPPIN Y II MI TONIN OF CHEEK egisted a native tide of a er antight to be and a The first property of the prop determine the fire implementation | / LILL ill ser 4 fs

Estable the wife Chapter cones intraorimercal me, a cumplicate to his his grant correct someth a very feed lose . . . con be a no America in 60 recouds

1 "1" | 13 (0) 10 5 h 5 f that a particle is a second at let I dear las graphy to to the section of the sect LITTLE HE AS STEEN HARRIST provide the property of the pr THE RESTREET

for the first factor to MANY BUTTORING COL the second with the state of th att & f to be of the first 2 th store A 1 hours of problem to the first of the com-. 6. Beet 1 . 5 1 10



RADIO CORPORATION of AMERICA

World Leader in Radio First in Television

All VIRGINIA

is in Blossom

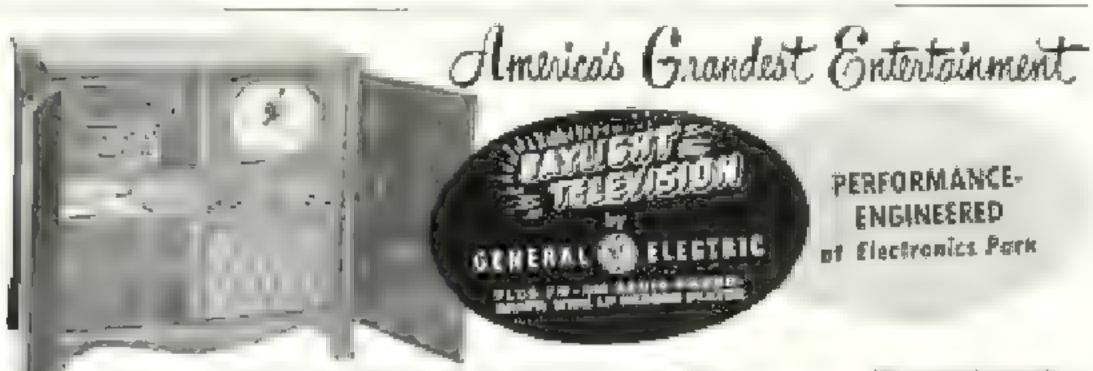
A land of beauty in a page ant of Springtime color . . . that's Mirginia in April and May! Herebauttraide is never more at theous . . . Her calendar of-events never faller . . . her atmosphere never 22500. Make your Spring trip to Miresus.



Maximont Condent, Richmond

Children de All His III HIN AN

DEPARTMENT OF CONSERVATION AND DEVELOPMENT Russin Str. 914 Capital Street Recessed to Application



MODEL 440. \$995.* 12%* THRE-BIGGEST DAYLIGHT FICTURE YET.

Over laboria on models from \$2220" to \$2200." Purious for a force sales.

k, a h, a' a hija li li ga ling a a da ada a ling a ar





Louise Guest -on the

Water Level Route



Marifact Mark and a 1 million of the BIRTHOUS REPORTED A PROPERTY OF A PROPERTY O Note that the second off and an anterior of a contract the following





Fire motor of it was your mage our Think to the energy New York Course yet the the please of a please presentant Politicals out of Male The first see in the least



La demonstrate Bright and Andrew not the business of the first the control of the co or de de William (d. 17 on f. Contract or to a lancalise significant to and supplied to a large Marco maps of a

frie my fry francist The sort I kat returned us new administration significant three driventing I programs person the Diene waver to publish





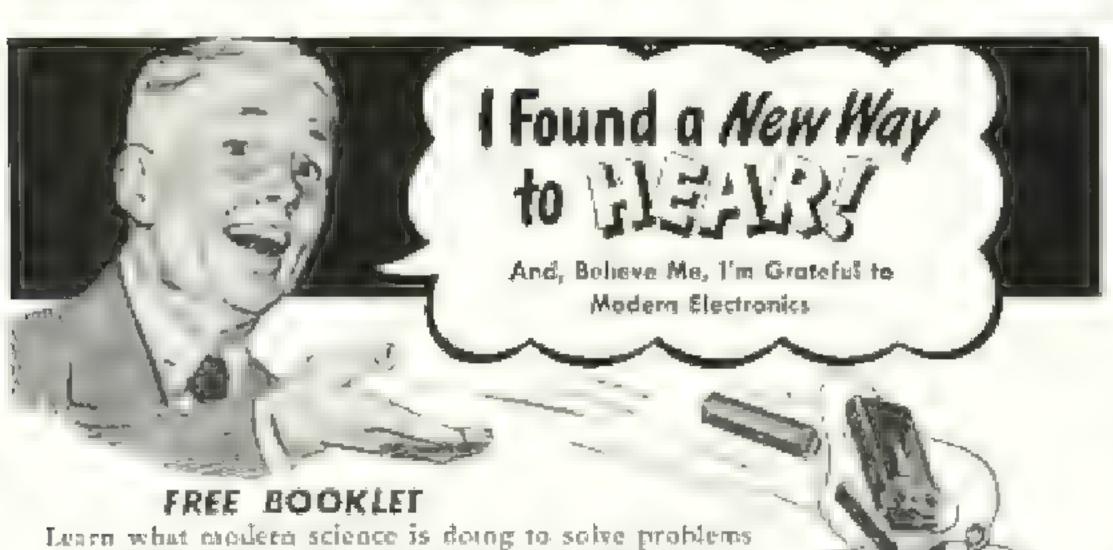


SET AMERICAN FIRST

Territor products have

Per to alver

AMERICAN COACH CO Consumity, Maph



of hearing loss for people cruelly handscapped. New,

tiny, electronic device gives new hope. Precision-faced to your individual receiv-

Send coupon today!

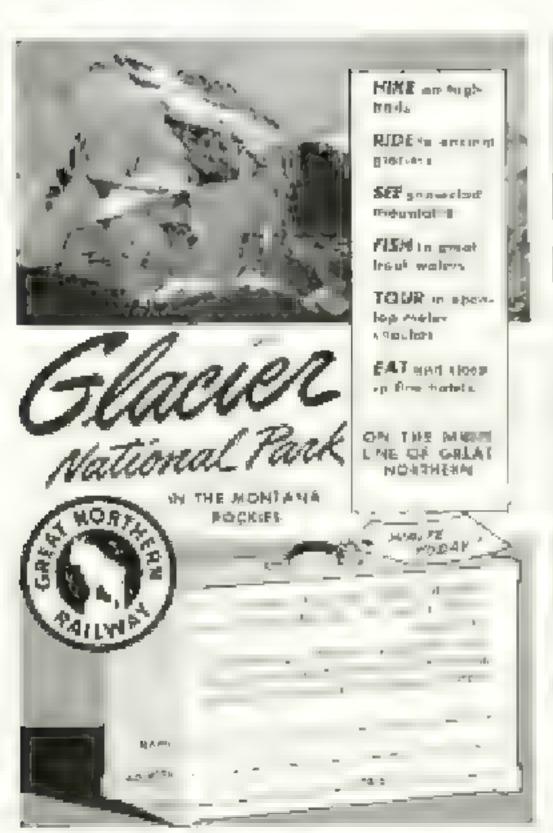
BC. JONE HEARING AID CO . DENT MAYOUS 1450 W. 19th STREET, CHICAGO & ALL

POPEMOST SHE-LARF HEAR NO ATE

SEND COUPON NOW FOR YOUR FREE BOOK!

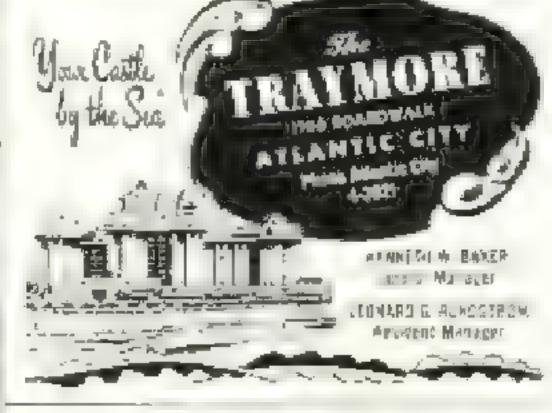
Relations Hearthy And Cor Dept MATC-3. 1,480 W 1914 Stock | Charmage 8 | 11 There and at fift bury of BOW TO OVER 1 (1791.) Sec. 1 April . may .











BR BOOK OF BRIDE

ANNAFOL , ME

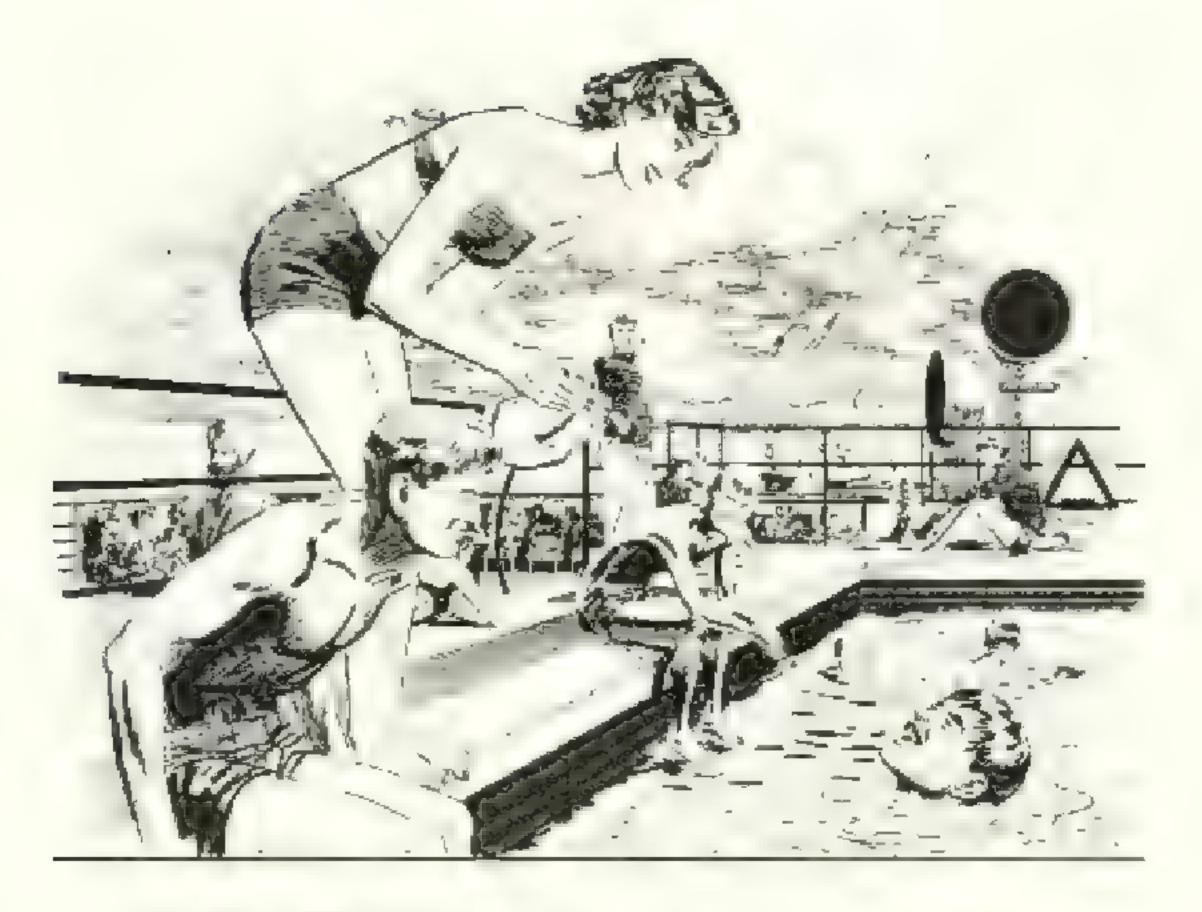
161 148 81

A R. JA Ga

from Minute Black The

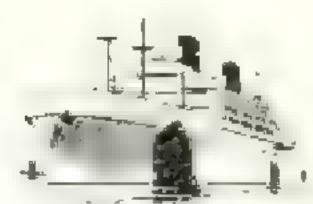
HAMPERS AND WA





Cruise in the Sun to the fascinating ports of the Orient

Enjoy II lary days on the 2.5 passingsy warsing or 2.5 passingsy expected forms from a





to we had reto per ower from a of to loange and the sun was a year or and the order of the person of

Monthly sellings — see your bonded travel agent

Your choice of country, S.S. President W. 162 with the Strong of the March of March of March of the Strong of the

If you niver the time, place a 112 day. Round-the World cruins absent the madern 5.5. President tolk or 5.5. President tolk or 5.5.

Ap J // .. " Tord A. . 1 "

AMERICAN PRESIDENT LINES have toucrious thatet through

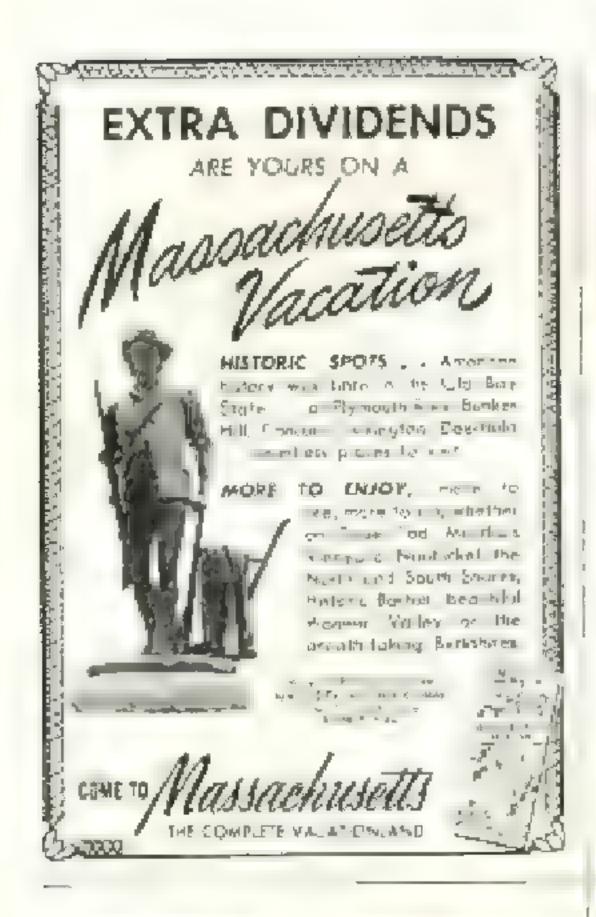
haft ? ge faute auch feiger en Reme Teeb Bantun Wortengene D.C. Die empe, Cleverant untallen.

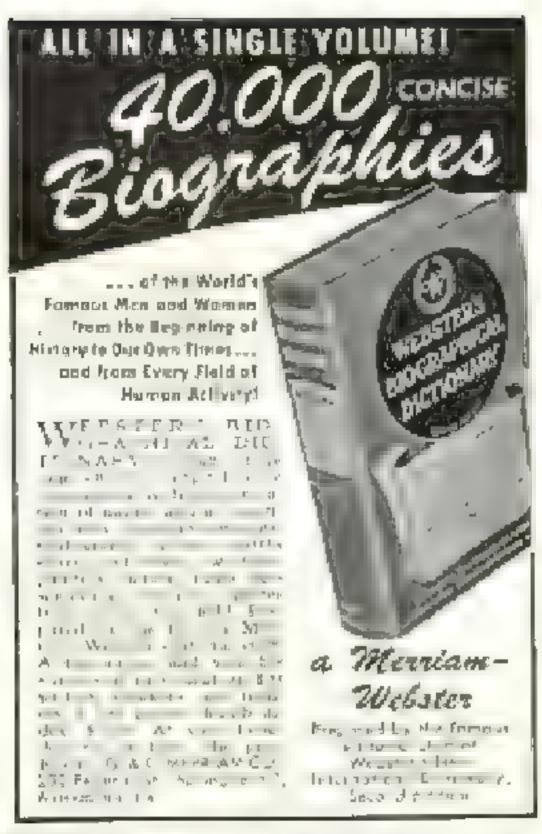
For tree, colorful craise booker, write American President Laws.

Even towns G-3, 19 Conforms 51, Son Francisco 4, Colifornia

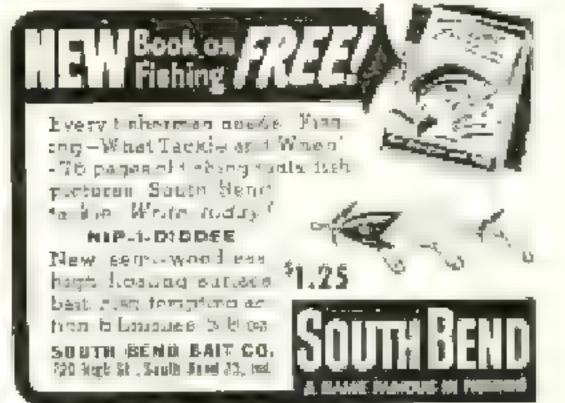


This Appears 1 va









OR SHOULD NOT CLIME STAIRS



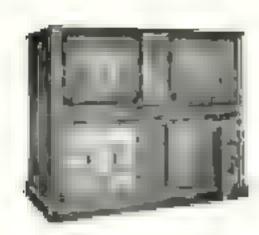
The state of the s



Sedgwick MACHINE WOLKS

医食物医生物 经基本信息的 医水管 医水管 医水管 医乳管





\$695°°

HOURS of consensus recentled music. At research tells

Magnetical Enterior Class Theorem have never soon as a fact of model of the sense with the leaves goods. A limit makes mirror travision of a constant structure of a constant structure of the constant



Wear False Teeth

yet my mouth feels fresh, clean and coolthanks to Polident!

""! know that dental plates that feel hat and sticky are a warring sign . . . so I sook my plate in Policent to avoid Dealure Steath."

Mrs. C. W. A., Daylon, Ohio

What a wonderful feeling to have by late that feels fresh, clean and cool from a symmet Position bath!

Associated and the second that the second properties of the second secon

The number, dental plates need the special rate of a operad denture element. The Polident every day, It's quick case, extraoure of, the next the world's arguest offering denture cleanser.

Took plate or bridge derly—filtnen minutes or more in a frach, coorsing solution of Folidant and weter

No Brushing



POLIDENT

Recommended by more dentists than any other denture cleanser



Amazing New Cream Rolds Tighter, Longer than anything you've ever tried or double your money back

POLI-GRIP

Lengthening His Waistline . . . Shortening His Life-Line



Like one out of every four people in our country today, this man weight more than be should.

If he been these excess pointed—brings has weight down to normal had aways it there—be will bear and teel better. Furtheen are, he will probable furthers there Statisticalines that weight immunither 10 percent about a normal, life superfactor is usually reduced about 20 per cent.

Destons any one of the resease overweight tends to shorten file in that it puts an additional burden on the beast and circulatory averest. It has been retimited that all august of a few to require the development of a few to mile of blood vessels. To maintain the racess body tissue, the brait has to work burder. Fortaintely, with good medical care, overlength can account to corrected.



The first step in any weight reducing program is to see the plant of a factorism pour less to a determine your less toaget. A six-foot man weight ing 185 pounds may be 20 pounds and a less toaget a factorism, which is a factorism.



Proper det i series for entropies weight Weight of a the me to a late the transition of the extension is entropy, and the extension is not transition for the extension is not transition of the key of the extension in the extension of the key of the extension is not transition of the extension in the extension in the extension is not transition.



Some exercise is necessary, but one should not expect to red me jort by exercising, there toes warn you would have to walk 36 miles to love one posted Sitemanus exercise may be sent to reach the result of the first to receive the relation of the control of the proper operate, and the proper operate,

By faithfully following the programs your nactive in a distribution of a green, a possible to be weight surely attend by, and sufers, burdend by and sufers, burdend or Metropolitan's free buoklet.

39.N. "Overweight and Underweight."

Metropolitan Life Insurance Company

THE SECOND CONTRACT

Ollements of Section to S.Y.





These Greyhound features add up to the smoothest, most relaxed ride on American Highways

weep aboard a Greynound SuperCoach, sink oack in one of the deeply-cushioned, body-contoured casy chairs . . . and you It know why foreyhound riters the most restful ride on American highways. This skillfully designed test transland equipment on thousands of Greybound buses), plus many other features of advanced engineering, make an hour's trip

or a cross-continental tour an adventure in relaxation. But SuperCourt confort doesn't mean super-prices. Greyhound travel to all 48 states. Canada, Mexico, costs far less per mile than was other type of transportation—a fraction at much as desiring your own far.



GREYHOUND



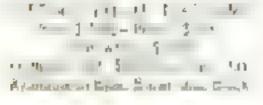
World's Greatest N Pen Value...

at \$1500



Measured by any standard, Sheafter's Sentinal in today's most outstanding pen value. For Sheafter employs, the cost sest of a lipen materials—the most efficient mechanical precision—and the skill of gifted craftsment in creating the pen you'll price as your constant companion. Try Sheafter's Sentinal today for a new writing expensate?

W. A. Sheaffer Fan Company Fort Madison, Jawa and Malton, Ontario, Canada

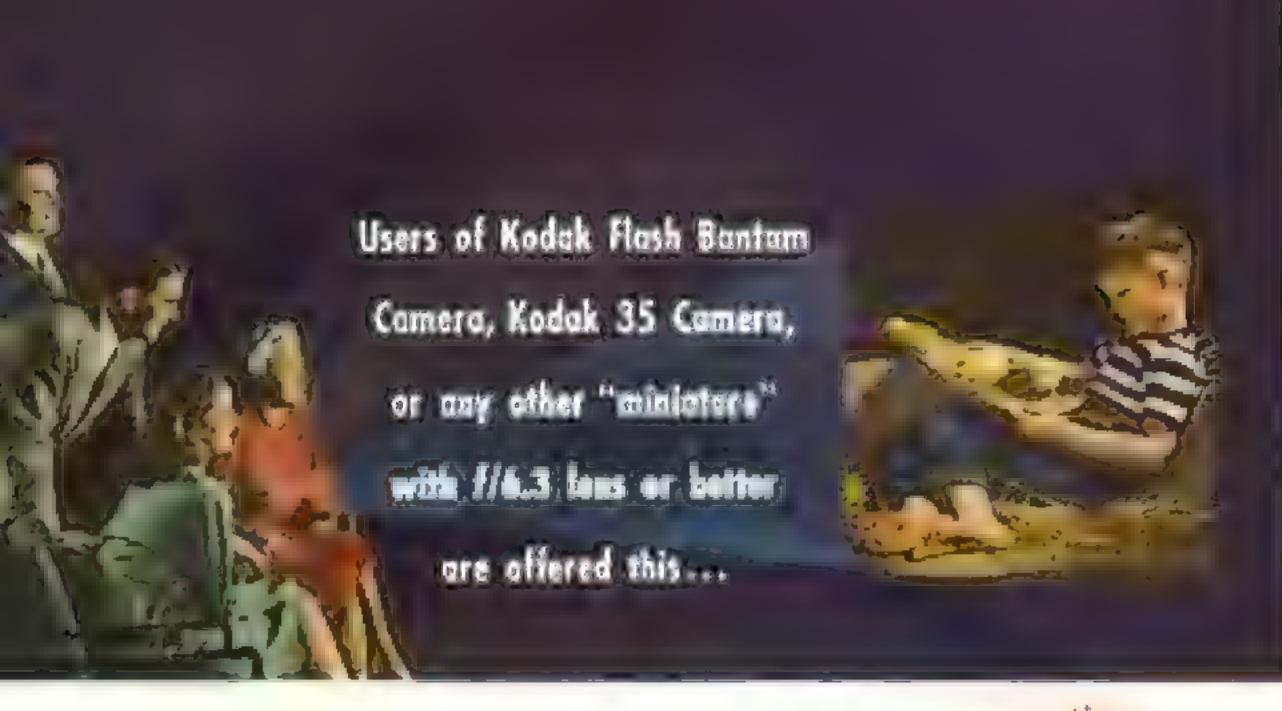




SATAR makes any pen write better, faul langer. Permanent or Washable. Esclutive top-well battle makes pen filling guide, clean, easy i

For some at all good dealers. Phroughout the United States and Canada.

A GIFT MEANS MUCH MORE WHEN IT'S MADE BY SHEAFFER'S



Double Reward

with Kodachrome Film

Your miniature gamera... or the or you're planers who has been a repers to well-state as you're to be at the following the

The common provesses actioned sense given at the sense of the sense that the sense the sense the interest of the sense the sense of the

Kodak Flash Conton of 4.5 Comero - 1 harden miles the lateral and the high solar 2001 the representation of the high solar 2001 Filtration

Kodak J5 Comern with range finder — with 14 . The . Th

Hasanan Kalak Corpus Beliester a NY

Prices subject to change without splige

It's Kodak for Color

No. 5 A. T. L. D. J. L. D. J.

brilliant screen projection

the property of the

gorgeous Kodachrome Prints





You who like to see off on a velver-green Complete Appairted & Prachad Professor Come Climba, Trans. to tuans ... who are exhibitarated by a concern of agricultural lines where resents the Lie viwas of a game trum which trade while water og aftart find specialist spaces ynd is a proper l'estresphinistres quar e with

A great sports state

Pennsylvanus still is muce than half forest although through publics permits centres for si for the store of solitation and conclusion for Copy 4.4 of a resemble of several features. we make the first the defend a suchable will enare also so all a relative appares. In the same a so have the local decreased hear bear the in the fact Accommission of the contract of the company grounds to law to the wigger

In a dimin, every netword me crease will Line of the a great of billion car in the grants and in a ware it contains and resteable wealth.

Les, your a sitting wal be a letterbing experforce on this spice also to entire their explaining

THEN YOU LEW YORK WITH STATE

CEPARTA-FORT	PERT VA	· 注 → 注形	S. Haller	1000

		124	Fa H	Burf	Сотигаци	-		200
'11	1-12	. 1	-i	Pt. 19	- 1-41	t,	f.	-
	a 11		- ,	- 1	1.7			

1 3 112			

Style Laty_



name in power- own-mowers

for thirty years 'MOTO-MOWER

Why push a franch ingwest when you can drive a "Moto-Mowar"... builders of cauthy poons moneys for that years ... write for Mereture and the name of the pagrest dealer . . . a MOTO-MOWER n. worth invising upon.

740

1-101 20" to 71".

MOTO-MOWER 1401 Woodward, DETROIT 1 Company



THE ROUND EARTH ON FLAT PAPER

11 (11 15 1 1 1 1 1 1 1 1 1 1 1 and the transfer of the state of There I be war to to the William (I, to he had a deal f hillian to cont Hambert of the terms of the second man and the learner of the contract of District the later to the later than Cole to the least of Sealer Cal the state of the s contract for the second section of the second I tale to be and a set of a

(11 , 1 16) 11 2 mm

NATIONAL GEOGRAPHIC Dept. E-F. Washington S. D. G. Would World of Southern UTAH · ARIZONA



BRYCE CANYON NATIONAL PARK

to a fire of the entering a strange, promore! The rate of burdle for tastic stonhapes of the forest, as, encounting

And the contract was and Prima of the contract to the tensor beautiful to the contract to the

Union Partie will take you to Cedar Can Utah-gareway to the Parks-in our conditioned countries.

UNION PACIFIC RAILROAD

Road of the Strucmliness



UNION PACIFIC RARROAD Room 231, Omobs 2, Nebr.

11		1 12 (12.5	11	- 5-1-1
100	4 111	m I	0.1	37 * * * * *
" 11"				





JOHNSON

THE MASTER KEY TO Geographic Knowledge

NATIONAL GEOGRAPHIC MAGAZINE Cumulative Index, 1899-1948

THE transite house of authentic latoriantion in your National Groupered by you by the National toward living is opened by you by the National toward living at his accompanying a quic ment for 1947-38. I contains 23 just reference as a topical headings, places, unions and your another, after many of the National Groupered Society and its Many of the National Groupered, with Society and its Many in by Calbert Groupered, with Society and its Many in by Calbert Groupered, with Society and its Many in by Calbert Groupered, with Society and its Many in by Calbert Groupered of Alternations.

Whither you have only a few back numbers of the Names of the screeks of all four of them from 1800 theorem 1948, this lader will enter you produce the select and locate all published in a rai on the protein make the the preference. The Mazarine and Index the there are the equivalent of a post of a close, carefreet and que produces of wer I geography.

indepensation in them. Some s, and himster, this better is under a force or to them cost as one of the expensive expression of entrues. Here this covers, 867 pages, 7 x 10 method \$2.30 as 1 is and secondary. Some interpension of the expension o

1947-48 Supplement to 1899-1946 Index Can Be Purchased Separately

Members owning he 1919-1946 In we will not duly use for the supplement which induces the 24 National telephonest to a suffered telephone force of the applement there is 250 or 1. 25 and 250.

Placement Wit

Datusta see accept a secolar

____[ध्यक्ष

Fig. start parase 8 ≤

or when ore me

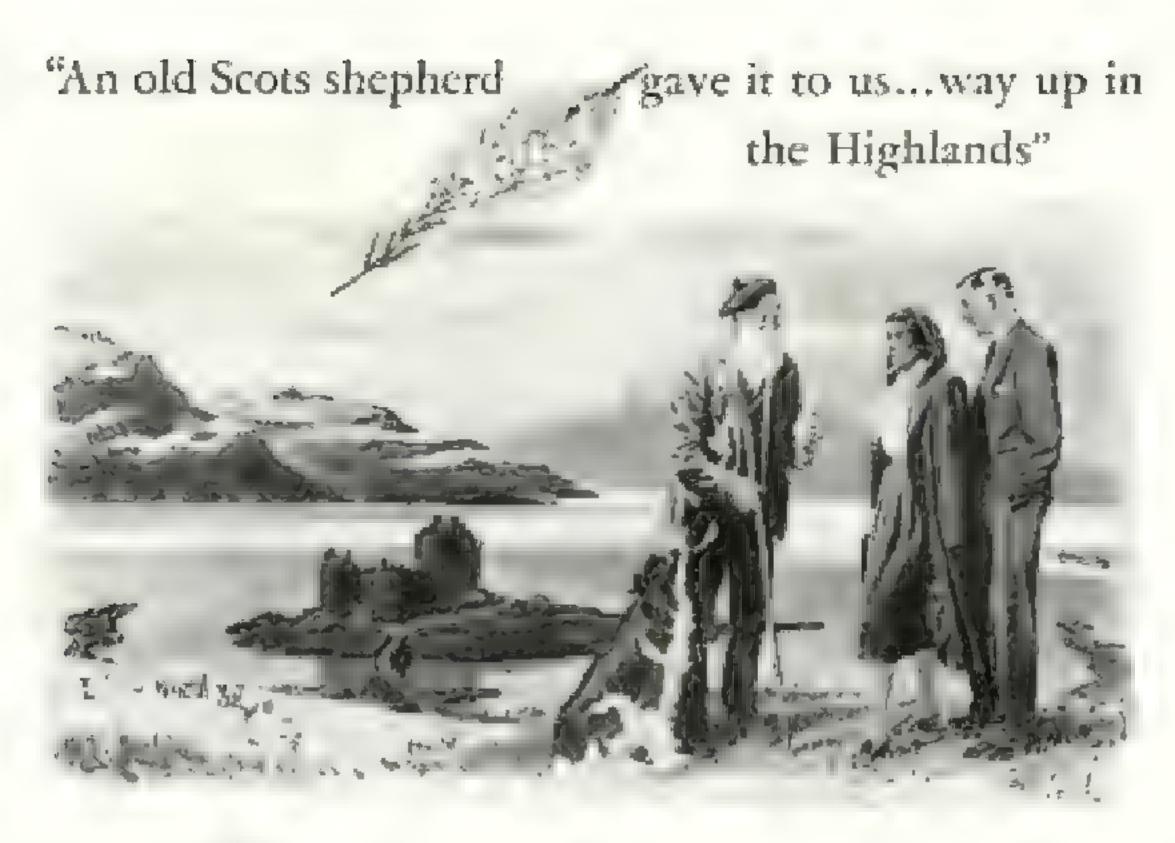
to present the Areas Areas Areas Library Spills Service Laborate Company Service Areas Are

regres of the . wy. to huppy ment to be at . 5

WRITE NAME AND ADDRESS IN MARKIN BELOW

NATIONAL GEOGRAPHIC SOCIETY.

Bank E-F. Washington & D. C.

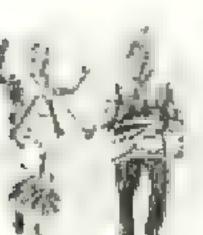


"Just a sprig of white heather but you can be sure we'll keep it always)

"It's good luck, ye ken', the old man told us. May it 'mind you of happy days here, and can you soon back to Scotland."

"Well, next Sum agriculture and a strendy we BINES THE CHARTER WASTER BOYLE

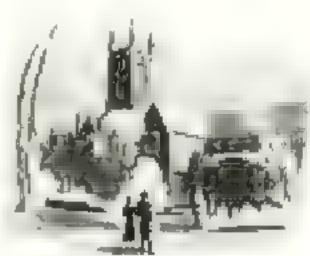
"For this keepsake does constantly remind us of the most wooderful, most varied at vicitions. and the real warmth of the we come we found



"Administration of the Marketine Danisard as Three to a first term worth there it yes no man rillions and first fig to: the say be also

Just begins facility and the but il starta up so many piecesmi distantiate . . . 48 a tricentary people in a smilling land . . . "

ar burs old F P P I P II Mar of the to a fillips for bid 11 July Fall July with the control in the re-The second of the second oursered verse. na es la en celant





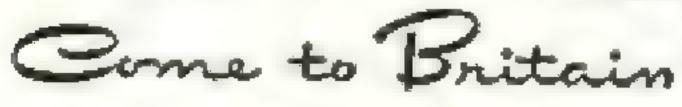


First and sec Mile I read from d [23] [1] 4 3 3 4 5 2 10 × 2 × 1 × 1/2 × and feel up a black began ert Wickling c'?

* lastrarih + 5 st ef ef the transmins see the latest terms. 11 15 0 0 11 1 ALL SA IT FOR SID es theiling. and a fellow share

PLANTOURTREEFARIT

Ash and Ash a firm tolly and and making you by your The set of the set of the set of or thereford This of the Asserb B. D. W. of garage 14 1 1 the first to 1 1 HILL The Course of the 1. or at 12 , he 3 4 A 1 . 51 % 119 4



Where more than hulf-u-million visitors from overseas found a Royal Welcome in 1948.





FROM SURF TO CLOUDS-





 New Hampshire's vacationland stretches from sandy beaches to mountain peaks. And between sonside and mountains lie over 1300 of the most sparkling lakes you've ever seen! Climate and natural beauty create the perfect setting for swimming, hilling sinling pritting billing or just relaxing.

In New York wind the New Hampahire Information Coreta. 10 Rockefeller Plaza

State Planning and Development Com-Send me FREE the 1940 N. H. Vacation Kit, with illustrated booklets, maps and ather information.

Name

Address



LINGUAPHONE IS YOUR PASSPORT

To the World

la your owe home, alone or in a group. you can now learn to speak any of 29 lenguages, quickly, soully, correctly, by the world-femous

LINGUAPHONE Conversational METHOD

Approved by educators, it has aided thousands to better John cultural an cyment, broader life. Send for FREE Book. Approved for Veterans under G. I. Bill of Rights.

LINGUAPHONE

60 RCA BUILDING, NEW YORK 20, N.Y.

THE QUALITY

"Stop Climbing Stairs"

"Taking it sug" on doctor's nulety is made possible by Shepard RemalIFF, Ride upstairs or three with no excitlem _ . m stair rlimbleg strain. Easily installed in oldor new homes ... - operates Irises field circuit ... also intely safe. Extensively used throughout the rution. Sent for estains.



Deplementarious = Free and Cities THE SHEPARD ELEVATOR CO.

Builders of Figuret Haspital Elevators

2433 COLERAIN AVENUE

CIMCERNATI 14, OHIO

NAMES OF A PARTY OF PARTY OF THE PARTY OF TH

Recommendation for Membership

IN THE

NATIONAL GEOGRAPHIC SOCIETY

* The Membership Duce. Which Are for the Calendar Year, Include Subscription to the National Geographic Magazine

To the Secretary, National Geographic Society Sixteenth and M Streets Northwest, Washington 6, D. C.	9
Loominate	

Occupation. (This information is important for the recurse)

Address:

for membership in The Society.

Name of nominating member.

Address

* DUES: Around membership in United States, \$4,00; Canada, \$8,00; abroad, \$5,00. Life Membership, \$100,00 U.S. funds. Remittances should be payable to National Geographic Society. Remittances from socials of confinental 3.159 United States and Canada should be made by New York shaft or international money order.

"We knew nothing else could express so much so simply"

The silent eloquence of a lovely family monument, standing serene in an appropriate setting, has a depth of meaning that words never can express.

When that monument is Rock of Ages, you have the assurance that it will remain in all its elequence and beauty through long years to come. For every Rock of Ages Family Monument is backed by a bonded guarantee to you, your heirs or descendants.



Many thoughtful people choose their family monument—as well as their come-

tery plot -before the need arises. "How to choose a ramility somewarn," a large illustrated book is available without charge or obligation. Write to Rock of Ages, Barre, Vt. Or ask for acopy from the Rock of Ages Dealer in your community, You'll find his name in the Classified Telephone Directory.



ALWAYS LOOK FOR THIS SEAL



ROCK of AGES

PARRE GRANITE FAMILY MONUMENTS

Ask your dealer for proof of permanence in any cemetery



A BATTERY OF MULTICOLON PRESSES

Judd & Detweiler, Inc.

(Enablehed in 1668)

Printers

EDDINGTON PLACE AND PLORDA AVENUE WASHINGTON, D. C.

THIS MASAZINE IS OUR INDOSREMENT



Visit America's Premier Spring and Summer Playground

ASHEVILLE

and WESTERN NORTH CAROLINA

Accept the challenge of blosseming expanses, lowering peaks, energizing mountain air, squahine that take and invigorates? See Great Saloks Mountains National Park, lefty Mt. Mitchell (on Blue Ridge Parkway).—Eastern Almetica's highest; storied Cherokes Reservation, spectacular Pontain Dam, Chimney Rock, Biltimore House & Gardens! Play gelf on truly great courses exportally your sports in glorsons surroundings. Modern accommodations of all types here in Asheville and "The Land of The Sky"!

CHAMBER OF COMMERCE Asheville, N. C. Please send folder "G" and full information to:

Same

Address



in the dramatic emergencies of fire and

storm, the telephone linemen help to

get the message through.

BELL TELEPHONE SYSTEM



All New, All-Coach Streamliners

TRAIL BLAZER

NEW YORK-CHICAGO

JEFFERSONIAN

ORK-WASHINGTON-ST. LOUIS





New Observation-Loyage Cors with reduc magazines, gave teltes, buffet and beveroge service for your added phenome.



Deficious meaningervant in restrict purposedings of the new macrons bining Lors. udd to the empyment of your trip.



Maria Foom Jonly 44 sents per card and added careboot or these were creptnight couches.

Completely new in everything but name. No finer trains on the rails today . . . anywhere . . . than these completely new Pennsylvania Railroad all-coach streamliners! From the smooth power of the great Diesel-

electric locomotives to trim new interms appointments and service refinements, they are the latest in travel luxury. Whether you travel on business or pleasure ... next time make a reservation on one of these famous mains.

PENNSYLVANIA RAILROAD



AND FEATURES a leula Puntaigor Representleftyw.

ADDED SERVICES

- sering and and a
- a Reciting their especialists to few positions
- 4 Electro-Freumonic Doors that open ist fingars' Nouch.
- a Extra-large week/osses for both men and regimen
- a Plustenter lighting (fright culting how they her ---
- * PERSONAPLIE SOUNDERSONS
- a New type of conditioning
- s Ample Heiggene storage Minds
- a All points reversed
- · South, magazines and beverage service in **Сонори Сига**

